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167

SOJOURN AMONG

THE

OCULISTS OF EUROPE

BY

FLAVEL B. TIFFANY.

1896

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PREFACE.

Some of the notes of this book were collected during the author's first visit to Europe in the years of 1876-8. The larger part, however, with the portraits, were gathered during his second visit, ten years later, 1887-8. It was his intention to have these notes published immediately on his return from the second visit, but the publication has been deferred from time to time, until now they are nearly ten years old. The photographs of these gentlemen and their letters are here published by their courteous permission.

The object in publishing the sojourn is not only to conserve in book form the portraits of some of these noted men in ophthalmology and otology, but to render the album, as it were, a sort of guide-book to the student going abroad for the purpose of prosecuting the studies pertaining to ophthalmology and otology. Many friends have also expressed the wish that this souvenir be published, to whom we commit it, hoping they may find it all they expected. Very truly, F. B. T.

Kansas City, Mo., 1897.

SOJOURN AMONG THE OCULISTS OF EUROPE.

Ten years had rolled around since my first visit to Europe. At that time, inexperienced and unsophisticated, I found my way to the foreign clinics for the purpose of gaining more knowledge upon the interesting subject of ophthalmology. The time (about two years) was mostly spent in the principal eye clinics of England, France, Germany, and Austria; but our present trip is with the desire to see and visit



FIG. 1. UNION DEPOT, KANSAS CITY, MO.

not only these educational centers, but to meet and converse with the oculists of Europe and obtain a more practical knowledge of how they individually manage their cases. It is on the 27th of August, 1887, that we say farewell for a time to the flourishing city of Kansas City, Mo. (Fig. 1), and ticket for New York via Pittsburgh and Washington.

PITTSBURGH.

We arrive at Pittsburgh in good time for the meeting of the American Society of the Microscopists, and put up at the Monongahela House, headquarters of the society. The meetings of the week, presided over by Prof. Rogers, of Cambridge University, were most profitable and interesting. The soirée of the last evening was a grand success; several hundred rare and beautiful microscopical specimens were shown to several thousand people.

From Pittsburgh we take the B. & O. Railroad over the Alleghanies to Washington, D. C., to meet with the International Medical Congress. The ride from Pittsburgh to Washington, along the Susquehanna, over the mountains, through the passes, in and out of tunnels, beside clear running mountain streams, with the ever-varying wooded scenery, is a delight that one coming from the muddy sluggish waters of the Kaw can well appreciate.

THE INTERNATIONAL CONGRESS.

After reaching the capitol city, the pride of every American citizen, we register at headquarters, enter the hall, present our credentials, and become a full-fledged member, decorated with the true colors and appropriate badge. Here we meet the *savants* of medicine from all parts of the globe.

In the ophthalmological section, where we spend nearly all of the time during the session, Paris is well represented, three of her most able ophthalmologists being present, all of whom take active part in reading and discussing papers; notably Landolt, Abadie, and Galezowski. Mr. Power, of London, Mr. Cross, of Bristol, and several others are present from England. Germany, Italy, and Norway are also represented. Hirschberg, of Berlin, came to America, but

was "kidnapped" and carried away to the mountains, so we did not have the pleasure of his presence. The section is crowded and every moment of the time is taken; all in all, it was a grand success.

ON THE ATLANTIC.

We must not dwell longer in Washington, but hasten on to New York. Here, after a hard day's work, getting letters of exchange, sea-chairs, and a thousand and one things preparatory to the leaving of America, a late hour in the evening brings us to pier No. 41, where lies at anchor the good ship *Etruria* of the Cunard line, in readiness to take us over the waves to Erin's green isle. She is a magnificent boat (Fig. 2), and at this time the fastest craft of the sea. Our state-room was selected a month previously, so we have first choice, No. 72. The wharf is crowded with sea-chairs, among which ours, purchased this morning, are nowhere to be found; a hunt and a rehunt among the numerous groups of chairs and among other baggage is of no use, and finally, as ten o'clock comes, others are bought. The warehouse and the exterior present a lively scene: carriages, hacks, omnibuses, hansoms, and cabs coming and going, passengers with various sea garbs looking for baggage, state-rooms, etc. About midnight I retire. Five o'clock in the morning is the time for us to set sail. Five o'clock comes; I wake, turn on the electric light, bound out, dress, and rush out on deck. One bell has rung. I hasten to the gangway, the hatch not yet being taken up. The seamen cry out: "Where are you going?" "In search of chairs," I answer. "You had better be in a hurry." I rush down; but everything is cleared away, and I return just as the last bell is sounding. The little tug is now at our side, pulling us out to sea. Pocket-handkerchiefs are waving from ship to pier and pier to ship. We are now at last on the ocean. A smooth, sheeny sea is spread out before us, the sky is bright, scarcely a cloud to be seen, except now and then a white,

fleecy one in the distance; we are gliding along at the rate of nineteen knots to the hour; at our right is a French steamer that we are fast running down, for our *Etruria*, as said, is the fastest ship that rides the ocean.



FIG. 2. SHIP ETRURIA.

On the 17th of September, 1887, a beautiful picture is before us: a silvery, rippling surface of the undisturbed deep; the sun at nearly high noon; the French ship a few rods at our right; here and there a schooner; our beautiful *Etruria*, enlivened with her numerous passengers, some promenading the deck, others reclining in their chairs, reading, or writing, or perhaps sleeping; the sailors out on the masts, unfurling sails—all gives a feeling of freedom, a sense of relief, to which we of the "Booming City" are little accustomed.

QUEENSTOWN (Fig. 3).

The god Neptune favors us all the way—no wind, no fog to speak of; and we land in Queenstown in just six days, six hours, and eighteen minutes from the time we left New York, one of the quickest passages on record.

And here we are on Erin's green isle with the Hibernians; the shamrock at our feet and the holly in its various shades of green on every side. We put up at the principal hotel, the annex of which has a theater. Af-



FIG. 3. QUEENSTOWN HARBOR.

ter dinner, we go to the theater and are treated to a characteristic Irish entertainment in the way of ventriloquism, elocution, and song by a wide-awake, glib-tongued Hibernian. His impersonations and recitations are quite entertaining, but frequently the audience become vociferous and boisterous, if not to say dis-

orderly, until finally Hibernio tells them that order must be maintained and that he proposes to have order if he has to come down and settle it himself. In the morning, Saturday, we take a jaunting-car (Fig. 4),with a wild, red-faced Irishman to drive us up the river Lee



FIG. 4. JAUNTING CAR.

and about the town, and such a ride we never experienced before. The Irish road horse is small, but is usually round and swift, and you only have to speak in praise of the snugly built creature to its driver, when "Pat" is ever ready to show the speed of his *palfrey.* The little Irish horse flies up and down the streets, turning the corners so quickly that we must hold fast to the seat, lest we go in one direction and our car in another.

We soon reach the river Lee—a most beautiful stream of clear water, flowing through a rich and picturesque part of Ireland into the Bay of Queenstown. On either side, as we continue our trip up the river, all along the road are shrubs of hawthorn and fuchsias with red flowers and rich fruits. Our Irishman is quite

an enthusiast over his mother country, and is ever pointing out places of historical interest. He stops and gathers the *shamrock* which is so emblematic of the Emerald Isle. In presenting the plant with its three little petals from the one stem, he relates the story of St. Patrick, in which he explains the doctrine of the Trinity.

Our drive up the Lee is a most delightful one. How different is the country here from that of America! The road is smooth, hard, and white; on either side is a high stone wall, capped with green hedges and overhung with the ivy; at our left is the gurgling, clear water, and at our right are green fields with their network of stone walls and hedges. Returning we get a fine view of the beautiful harbor, resembling somewhat the Bay of Naples (Fig. 3); north of the town we pass the ruins of several old castles built by the Danes many years ago.

CORK.

Cork is only about six miles from Queenstown, and we reach here the following evening. It is quite a pretty city, with about 100,000 inhabitants. It is situated on the Lee. It has several beautiful broad avenues and quays. Here we find a highly civilized and cultured people—fine-looking men and handsome women, as fine as we have seen in any country. The Irish girl here possesses a fairness of complexion and grace of form that is quite charming.

BLARNEY CASTLE.

The evening of September 27th finds us driving again in an outside car to Blarney Castle, which is but about five miles from Cork (Fig. 5).

The road at the side of the river Lee is most delightful. It is a romantic drive, and we reach Blarney Cas-



FIG. 5. BLARNEY CASTLE.

tle a little before sundown, wander through the old ruins, in and out of caves and secret chambers, climb to the battlements, reach the parapet, and touch the "Blarney stone."

"The stone whosoever kisses,
Oh, he never misses
To grow eloquent;
Thus he may clamber
To a lady's chamber
Or become a member
Of parliament."

We touch the stone, but do not attempt to kiss it, as the dizzy height will not permit the trial; a sailor not

long ago lost his balance in the attempt, fell, and broke his neck, so we take warning and forego the charm of silvery-tongued eloquence.

"The groves of Blarney, they look so charming,
Down by the purlings of sweet silent brooks—
All deck'd by posies, that spontaneous grow there,
Planted in order in the rocky nooks.
'T is there the daisy, and the sweet carnation,
The blooming pink, and the rose so fair;
Likewise the lily, and the daffodilly—
All flowers that scent the sweet, open air.

* * * * * * * * * *

"There's statues gracing this novel place in,
All heathen goddesses so fair—
Bold Neptune, Plutarch, and Nicodemus,
All standing naked in the open air.
So now to finish this brave narration,
Which my poor geni could not entwine;
But were I Homer, or Nebuchadnezzar,
'T is in every feature I would make it shine."

—*Richard Alfred Millikin.*

Sunday is spent in Cork, and we attend church at the Cathedral on the site of the ancient Monastery of St. Finn Bar. Here is a fine chime of bells, equal to the Shandon bells made famous by Mahoney's lyric poem, "The Bells of Shandon."

"With deep affection
And recollection
I often think of
Those Shandon bells,
Whose sound so wild would,
In the days of childhood,
Fling round my cradle
Their magic spell.

* * * * *

"Such empty phantom
I freely grant them;
But there 's an anthem
More dear to me,—
'Tis the bells of Shandon,
That sound so grand on
The pleasant waters
Of the river Lee."

Sunday, September 25th, I make my first call on one of the oculists of Europe, Dr. Sanford, a very pleasant gentleman; he invites me to a social glass of wine, and to join him at his eye clinic Monday morning, to witness an operation for cataract. But Monday morning we are on our way to the Lakes of Killarney, via Bantry Bay and Glengariff. From the shower of last night the country is fresh and green; shrubs of geranium and arbutus trees, with their fragrant bloom and rich fruit, grow luxuriantly all along the roadside. It is a very singular-looking country, this that we are passing through. The ground is fairly riddled and seamed with ditches, hedges, and stone walls dividing it into small patches of from one to three or four acres. It reminds one somewhat of the patchwork in a "crazy quilt." It is certainly unlike anything we have seen in any country before. What are these black mounds or pyramids that we pass on either side of the road? They are cords of peat cut from the bog. We are surprised to see so much of the bog at this altitude, as we had always associated it with low, marshy swamps, and we are also surprised to find it so thick, being six or eight feet deep. The peat is very black and is quite solid. It is cut into chunks about a spade's width, and is about the only kind of fuel the people use in the southern part of Ireland.

BANTRY BAY AND GLENGARIFF.

Half-past 12 o'clock brings us in view of a most charming landscape (Fig. 6); a sheet of clear blu water, with wooded sloping hills, flecked with the light

and shades from a mottled September sky. Ah! it is Bantry Bay, with its little village of stone houses. Here we find a good lunch awaiting us, and soon we are mounted on an open car, drawn by three horses over the hills to the Lakes of Killarney.

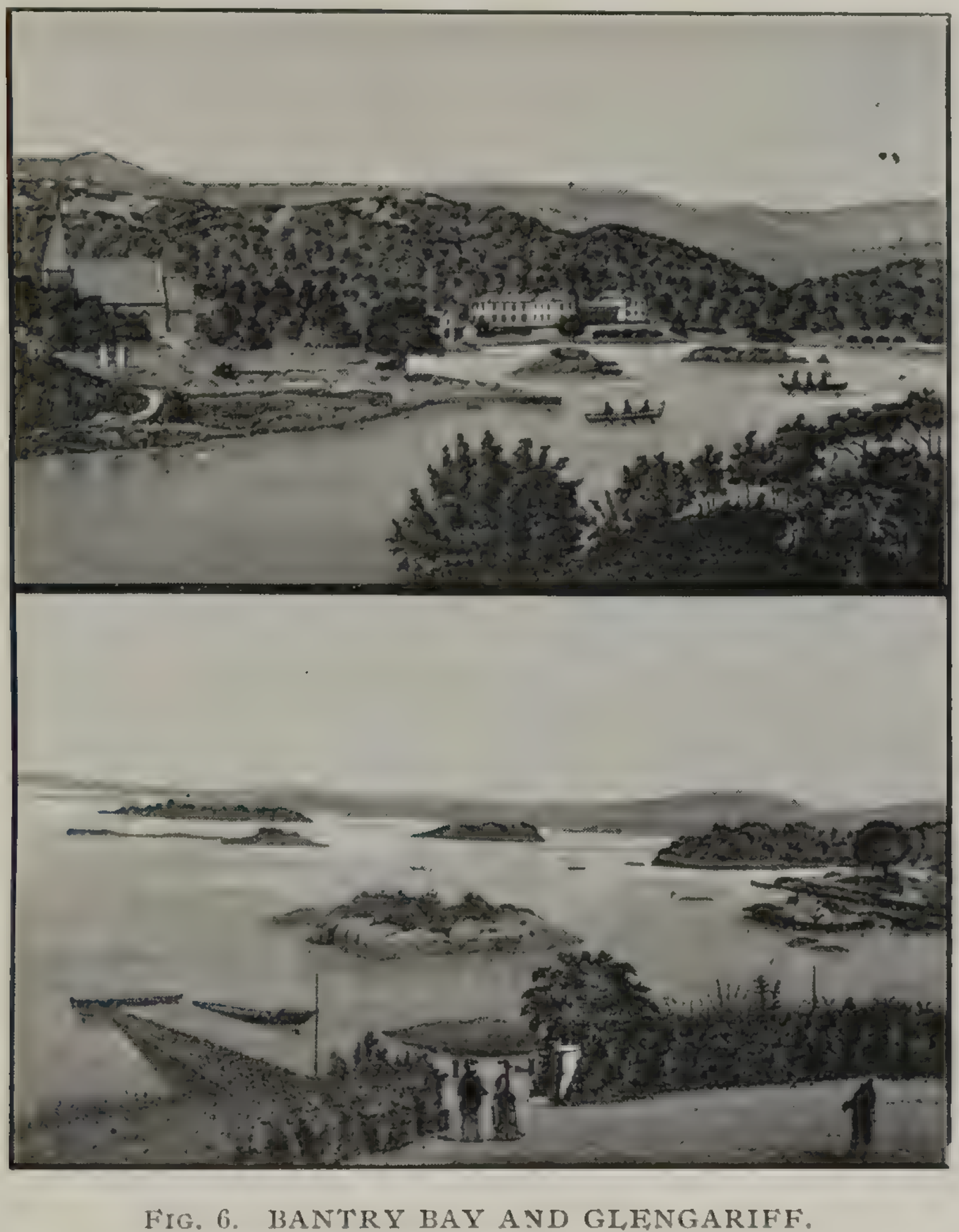


FIG. 6. BANTRY BAY AND GLENGARIFF.

GLENGARIFF.

Arriving at Glengariff, we stop for the night at Roche's Hotel. Glengariff (Fig. 6) is a most charming spot. It is situated at the mouth of a narrow mountain glen opening upon the bay. The approach to the hotel is one that may be long remembered or never forgotten. The road is smooth, white, and hard, passing through quite a dense forest of large trees, with their lofty, far-

outstretching branches forming an arch of rich green foliage; and then on either side, at a more modest height grows the mountain ash, with its rich fruit, and below there is a dense growth of holly, with its various shades and varieties, now all aglow with red berries. The arbutus and fuchsias, with their beautiful and fragrant bloom, add to the picturesqueness of the way. No wonder that this sheltered and romantic place, Glengariff, looking off upon the open sea, with its equable and salubrious climate, is a favorite resort. There are here the remains of a bridge, called Cromwell's Bridge, which, it is said, he caused to be built at an hour's notice. It is a double-arched bridge, with three abutments, built of slatestone taken roughly from the quarry.

LAKES OF KILLARNEY.

As we continue our way in the morning, climbing the mountains, a glorious vista opens up before us: a panorama of sea, mountains, rivers, waterfalls, and glens. The mountains are nearly all slatestone. About the only thing that grows here is the heather. Peat is found many feet deep on top of these mountains.

The scenery is a little suggestive of that of Colorado Springs on the way to Pike's Peak by way of the Seven Lakes, only we get here a view of the sea, and now and then the ruins of an old castle or a tower crowning some of the loftier peaks.

All along the way children in the most abject poverty follow by the side of our car, offering the blooming heather, for which they expect a penny thrown in exchange.

As we reach the summit of the mountain the weather becomes quite cold, and at short intervals a storm of cold rain, hail, or snow bursts upon us. At the summit we pass through a large tunnel, and we arrive here just in time to be sheltered from a driving rainstorm. Now we are going down the other slope of the mountain, by the side of the Black Waters. Here the

Lakes of Killarney come into view (Fig. 7). We reach Killarney about dark and put up at the Station Hotel, the best hotel we have found in Ireland. After dinner we walk down the narrow, gloomy streets of Killarney. Killarney town is small, only about 6,000 inhabitants, and belongs to one man, a Roman Catholic peer, the Earl of Kenmare. The houses, with but few exceptions, are but one story high, with straw-thatched roofs. There are but three or four business streets, and they are unlighted. So, after purchasing a few souvenirs in



FIG. 7. GENERAL LAKES OF KILLARNEY.

the way of views, etc., we return to the hotel; for, after all, it is the far-famed lakes of Killarney we come to see, and not the town. In the morning, in company with two gentlemen, an Irishman and a Scotchman, we take a jaunting-car to the lakes. The day is one of tears and smiles, constantly changing from rain to sunshine, from sunshine to rain. Often before the raindrops cease to fall the sun shines forth, and beautiful rainbows are seen against the mountains or spanning the valleys.

As we reach the mountain and Lake District a beautiful vista is before us—the wooded landscape mantled by an ever-changing rich green, which is gemmed with red berries of arbutus, holly, mountain ash, and hawthorn. At our right against the mountain is a rain-storm, and in front of us a beautiful rainbow arching the valley, with bold cliffs in the distance. Soon the shower of the mountains has reached us, and we are pelted by a hail-storm, which, however, passes quickly and again we are in the sunlight. How fresh and sparkling everything looks now! We are met here by a dozen or more men and boys on ponies. We cannot for the moment imagine what they want, but we soon find out, as each one cries, "A pony for the leddy? A pony for the leddy?" The "leddy" thinks, however, that she prefers to walk through the pass with the gentlemen, and we tell our friends that we do not care for a pony; but they are not easily dissuaded from the belief that we shall finally come to it, so they keep pace with our car, surrounding it and crying out the price of their ponies. They make such a din that we are obliged to insist that we will not hire and most of them turn back. At the gap we leave our little car, for the rocks which have fallen from the precipices of the narrow pass are scattered all along the road, making it impassable for the car. We alight here at Kate Kearney's cottage (Fig. 8). "You have all heard of the beautiful Kate Kearney, who lives by the Lakes of Killarney."

The place here is now converted into a lodge where beautiful souvenirs (ornaments and articles of furniture made from the arbutus, holly, ash, and bog-wood) are for sale. The bog oak, by the way, is dug from the peat-beds, and is said to have been preserved since the flood. It is black as jet and very fine-grained, capable of a high degree of polish. This oak does not grow here now, nor has it within historic times. After securing some souvenirs, we begin our journey on foot through this wild, narrow, deep pass of four or five Irish miles to the Black Valley, or head of the lakes. On either hand the precipitous rocks hang over the pathway, threatening the traveler. Not far from

Kate Kearney's cottage we come to the "Balancing-rock." So cleverly poised is it that the mere pressure of the hand causes it to move. Just here we meet with another peculiar experience. Several barefooted Irish girls of various sizes and ages appear from behind the rocks, reminding one somewhat of Rip Van Winkle's experience—the old man of the mountains and his family;

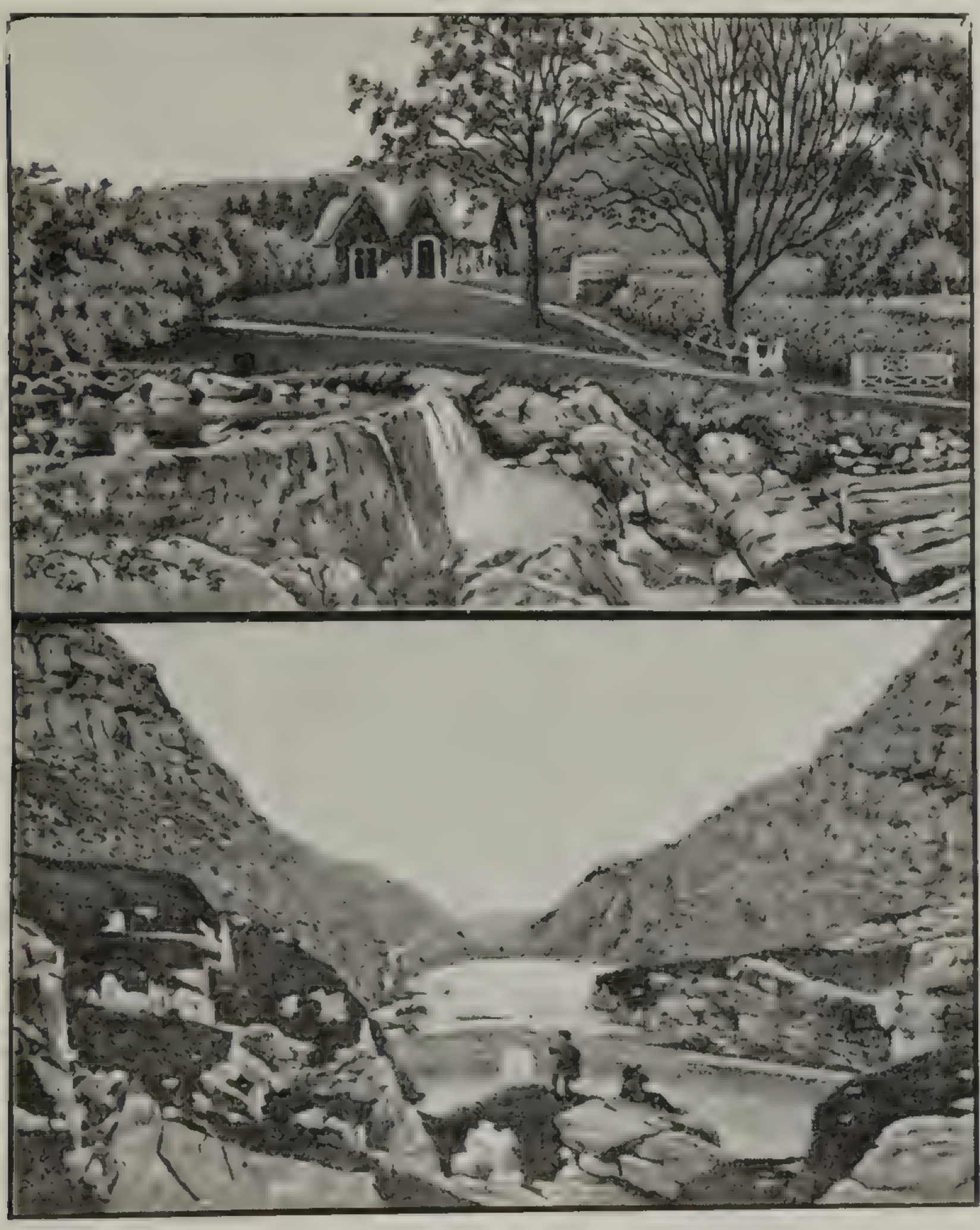


FIG. 8. KATE KEARNEY'S COTTAGE. FIG. 9. THE LOE.

only these girls can talk, and quite glibly. Each has her bottle of poteen, or "mountain juice," and goat's milk, which they assure us is very wholesome and just what we need to cheer us on our way through the pass. The "mountain juice" would keep us from taking cold, for it is "pure stuff, and has never before seen the outside of a still." These people are very poor and resort

to any means of laying up a penny for the winter. They tell us that they live on goat's milk and rye bread all the year round, never tasting meat but once a year—Christmas-time.

Near this stone is the Cave of Dunloe. It is supposed to have been used by the Druids in the early days of Ireland. A small mountain stream, called the Loe, traverses the glen and finally widens into the upper lake (Fig. 9). Not far from the Black Logue we cross this stream where St. Patrick is said to have banished the last Irish snake. Every now and then our bugler blows his bugle, the clear, melodious notes of which ring from cliff to mountain and are responded to, as it were, by bugles from the tops of the surrounding mountains, both far and near. The scenery all the way is grand and varied. We soon reach the upper lake, where we find the boatman awaiting us on the shore with luncheon, which is quite acceptable after our mountain walk.

We are now gliding along through these famous Irish lakes, full of islands of legendary interest, with the rugged mountains surrounding them. Many of these islands are covered with arbutus, whose rich red berries resemble our strawberries in taste as well as in color. "In the rocks on either side of the narrows at the junction of the upper with the middle lake there are large footprints of the Killarney giants, who used to jump across the narrows."

"There is not in the wide world a valley so sweet
As that vale, in whose bosom the bright waters meet;
Oh, the last rays of feeling and life must depart
Ere the bloom of that valley shall fade from my heart!"

—*Thomas Moore.*

As we pass into the middle lake we row around the base of a high mountain, on the bold top of which is seen the Eagle's Nest (Fig. 10). Here the eagles have come to build their eyries for centuries. We pass Innisfallen (Fig. 11), the most beautiful of all the islands of Killarney, which has been immortalized by the poet Thomas Moore in the lines written while the guest of Lord Kenmare:

"Sweet Innisfallen, fare thee well;
May calm and sunshine long be thine.
How fair thou art let others tell,
While but to feel how fair be mine.

"Sweet Innisfallen, long shall dwell
In memory's dream that sunny smile
Which o'er thee on that evening fell,
When first I saw thy fairy isle."



FIG. 10. EAGLE'S NEST.

Near the landing-place is an old abbey, nearly 1300 years old. At this spot the celebrated Annals of Innisfallen were written.

We take the car at Ross Castle (Fig. 12), the ancient barricade of the O'Donoghues. It is at this point where O'Donoghue disappeared into the lake, and ever since he is seen on a certain day of each year, coming from his watery home into this old world again.

After driving to the Jose Cascade, which is a most beautiful waterfall dashing down the side over precipitous rocks with forest trees by the side, we re-

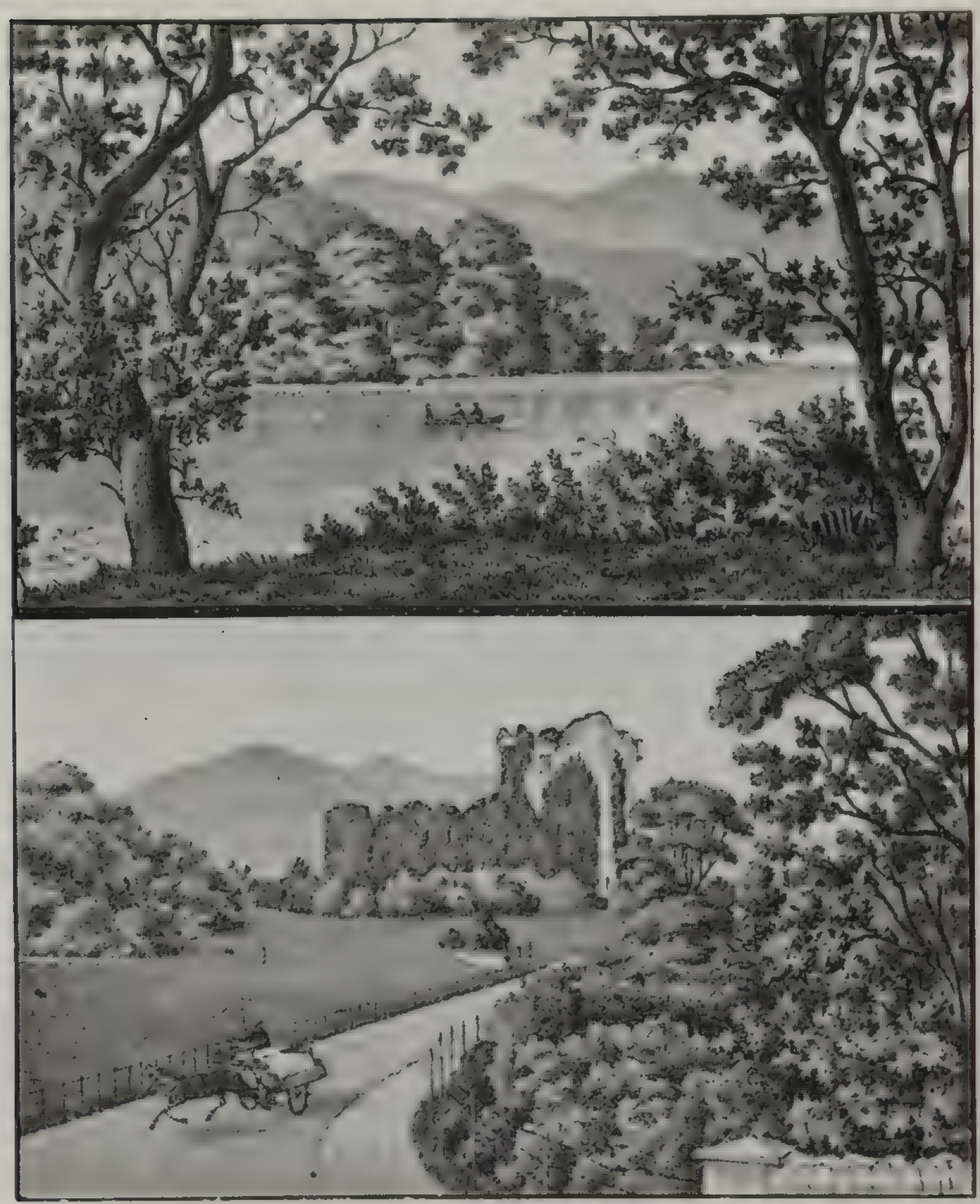


FIG. 11. INNISFALLEN. FIG. 12. ROSS CASTLE.

turn to the hotel just in time to take the 11:17 a. m. train for Dublin, where we arrive at nightfall, and now begins actual, earnest work with the ophthalmologists.

CATARACT.

In our sojourn among the oculists of Europe the subject most frequently discussed is cataract, and that we may better appreciate this subject, let us briefly consider here some of its salient points. The accompanying cut (Fig. 13) represents a transverse section of the

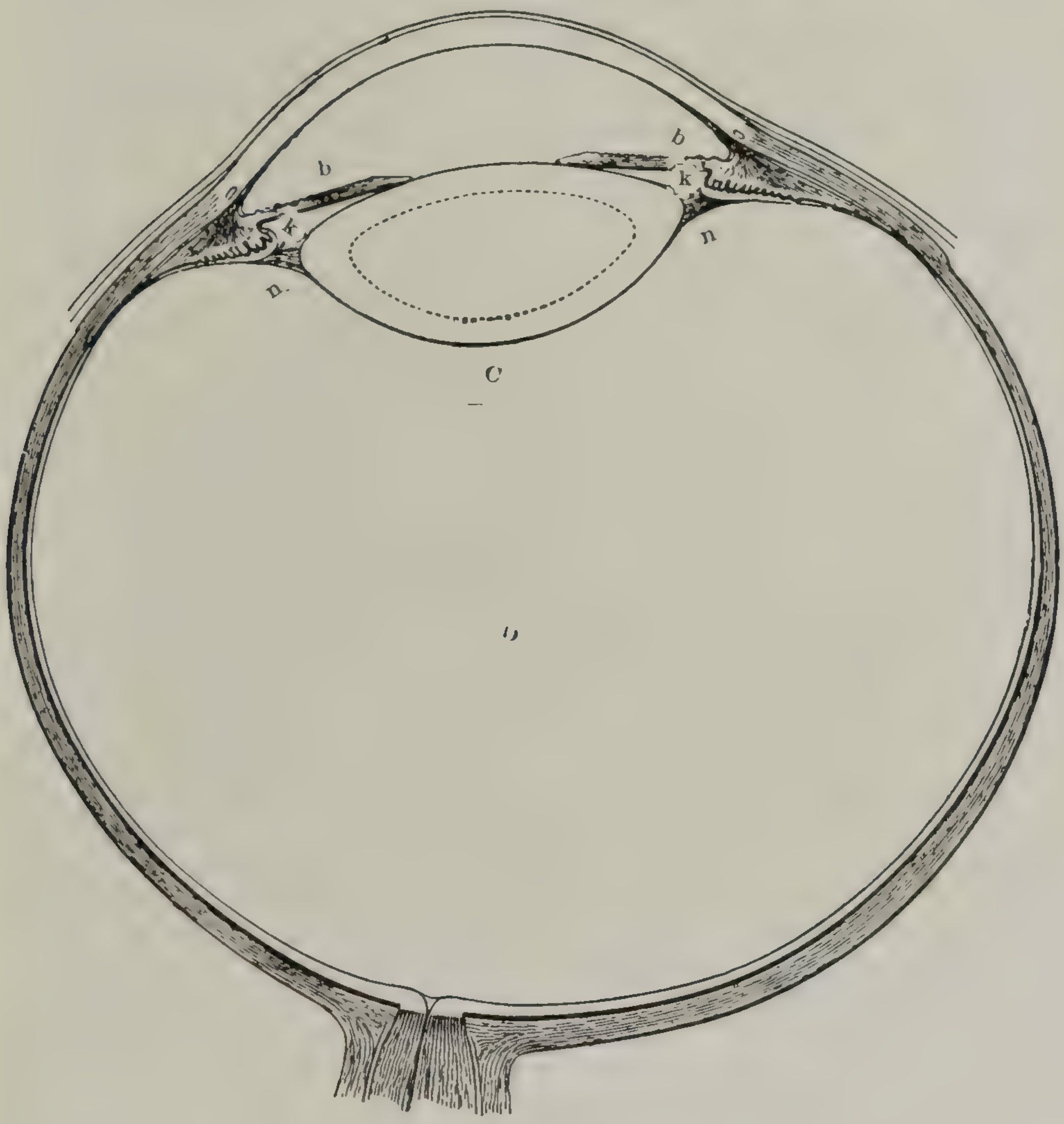


FIG 13.

eye, showing in a general way its anatomical structure.

The part most important in the consideration of the subject is the crystalline lens (*c*). This is composed of concentric laminæ similar to the structure of an onion. It resembles in shape and size a small plum-stone. The central portion, or nucleus, is more dense

than the outer, or cortical, portion. The lens is enclosed in a delicate membrane, its capsule. This capsule is continuous with a ligament called the suspensory ligament (*nn*, Fig. 13). The lens is located in a depression of the anterior portion of the vitreous body, the hyaloid fossa. It is immediately back of the iris (*bb*), and when the pupil is contracted, the iris is in juxtaposition with its anterior surface. It is held in place by the suspensory ligament and ciliary processes (*kk*).

FIG. 14.

It is non-vascular, getting its nourishment by endosmosis through the medium of the aqueous and vitreous humors. Its nourishment comes from the numerous blood-vessels of the choroid, ciliary processes, and iris, which structures are in close proximity.

The crystalline lens is bi-convex, having its greatest convexity at the posterior part (when at rest or adjusted for distant objects). The anterior surface increases in convexity when the eye is accommodated for near objects.

Office of the Lens.

The office of the crystalline lens is to focus rays of light upon the retina (Fig. 14), it being the principal re-

fractive medium of the eye. It is constantly changing its convexity whenever one looks from a far to a near point, and this change is brought about by the ciliary muscle (Fig. 15), which acts on the suspensory ligament.

Cataract.

Cataract is an opacity of the crystalline lens or its capsule. If the opacity is confined to the lens, it is lenticular cataract; if to the capsule, it is capsular cataract. There are several different forms of cataract (two grand divisions, hard and soft). As the capsule alone is rarely opaque, we shall not consider in this connection capsular cataract.

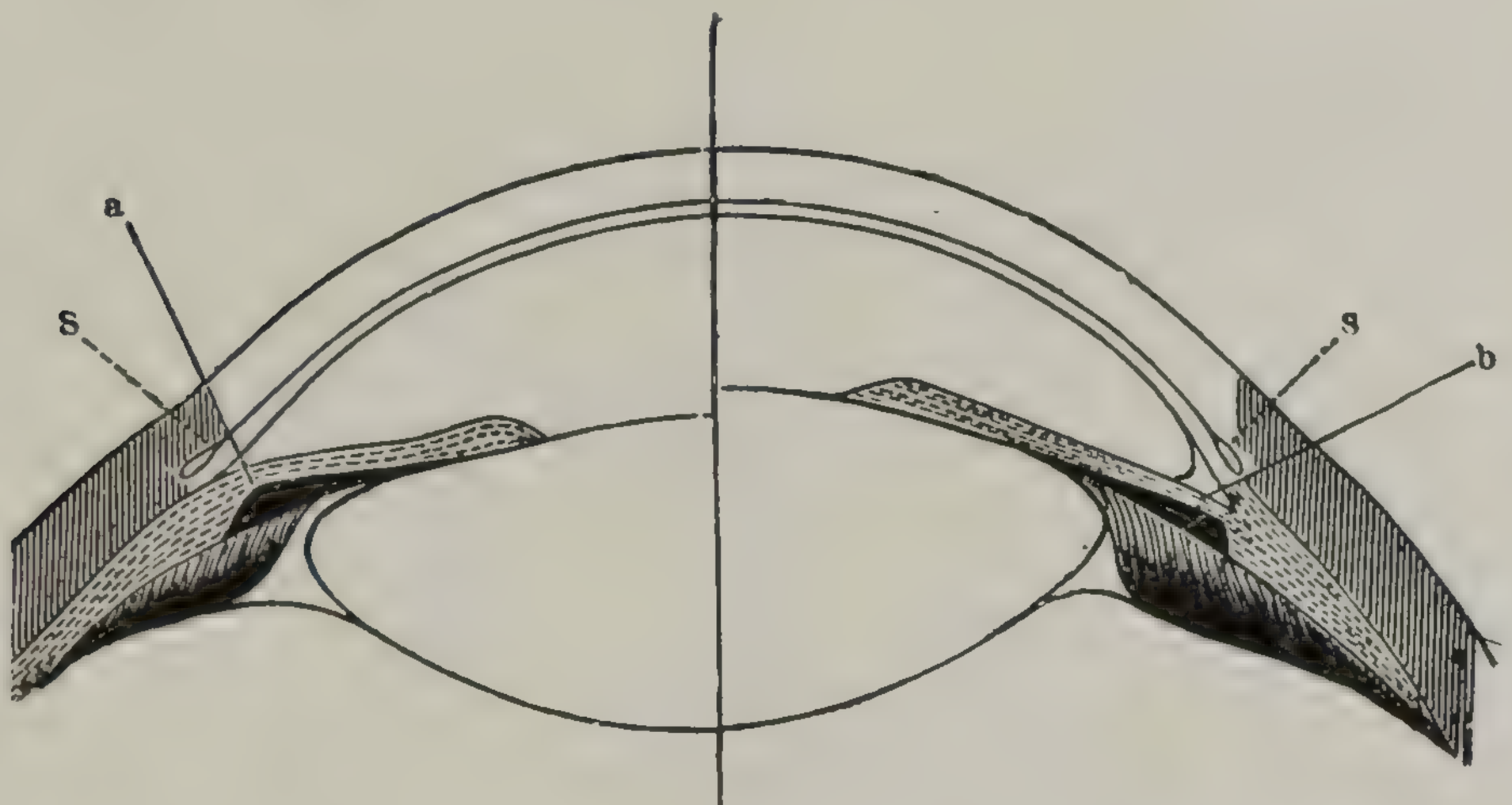


FIG. 15.

If the opacity of the lens is confined to the center or nucleus, it is called nuclear cataract; if to the outer or cortical portion, it is called cortical cataract; if to the different layers or lamina, it is known as lamellar cataract. Hard cataract is found in people over forty or forty-five years of age. In old age it is sometimes called senile cataract; and in senile cataract the nucleus is the first to become opaque. Soft cataract occurs in early life, and when found at birth or infancy, it is called congenital or infantile. Under the head of soft cataract, according to the part first involved, we have lamellar and cortical.

Fluid Cataract.

Sometimes the lens, especially in early life, undergoes such retrograde metamorphosis that only a turbid fluid remains, which is called fluid cataract.

Secondary Cataract.

Cataract sequent to other diseases, such as glaucoma, nephritis, or diabetes, is secondary, and is named after the disease causing it; if caused by injury, it is called traumatic cataract.

It is important to recognize the different forms of cataract, especially those sequent to other diseases, as some varieties only are amenable to treatment; besides, the treatment must be varied according to the kind, for what would do for one might not do for another; for instance, a hard cataract must be removed by extraction, while a soft one should only be discised and removed by absorption.

There are certain symptoms which enable us to make a differential diagnosis of cataract; soft cataract is of early life, while hard cataract is confined to persons over forty or forty-five years of age. By the ophthalmoscope we can readily determine if the opacity is confined to the nuclear, to the cortical, or to the intermediate portion. Also the symptoms given by the patient will assist in the diagnosis. If the opacity is confined to the center or nucleus of the lens, the patient will say that he can see better when his back is towards the light or in twilight than in the bright sunlight; that is where the pupil is slightly dilated. The person with cortical or lamellar cataract, the opacity being less dense in the nucleus or center than in the periphery. sees better in the bright light, with his face to the window, than in twilight. The appearance also of the opacity determines not only the kind, but the rapidity of the development. In soft or semi-soft, as in cortical or lamellar cataract, the opaque striæ are less numerous and broader than in the nuclear, senile, or hard

cataract. Broad striæ always indicate a more rapid development than the narrow do.

A person with cataract will frequently speak of being troubled by a mote, likened to a fly or mosquito, in front of the eye, which he sees on any white object that he looks at—as, for instance, the page of a book or his plate—and he instinctively trys to brush it away. He will frequently say that he sees the moon doubled or multiplied; that his vision becomes dim; and he *frequently* has to continually change his glasses for stronger ones, until finally no glass will improve his vision. Sometimes the opacity of the lens assumes a stellate or star-shaped appearance, when it is called stellate cataract. In infants the opacity may be limited to a small portion of the front or back of the lens, most frequently at the anterior pole. This form is called polar cataract. It may be seen even by the naked eye as a light-colored spot in the center of the pupil. In this form of cataract, as in most cataracts of infancy, the baby is in the habit of passing its little hand rapidly before its eyes, and not infrequently do the eyes deviate, turning outward or inward. Occasionally there is an involuntary oscillation of the globe, known as "nystagmus." It is important that an early operation be made in this form of cataract, so as to avoid such complications, and also to prevent the loss of power of the retina resulting from disuse.

Where the opacity is extensive, and the lens is opaque throughout, the pupil, instead of being black, is of a grayish white color, varying in its appearance as to the particular kind. Occasionally we have a chalky or cretaceous change, when the pupil is almost white.

Size of Cataract.

Cataracts vary in size. A large cataract may be recognized by the iris being slightly convex anteriorly, and by a shallow chamber. In a small cataract the chamber is deeper, and the iris is flat, or even slightly concave. It is important that we should recognize a large cataract before attempting to extract it, that we may regulate the extent of the incision accordingly.

Cause.

In senile cataract it is difficult to say what the cause is. It has been tersely said that it is no easier accounted for than are gray hairs or wrinkled skin; it is probably due to an arrest of nutrition. We believe that cataract appears more frequently in the hyperopic eye than in the emmetropic. The power of accommodation is brought more into requisition in the hyperopic eye than in the emmetropic; therefore it would be reasonable to suppose that this power of accommodation (the ciliary muscle, which is intimately attached to the choroid and iris through the suspensory ligament) is, when overworked, responsible in a measure for cataract. That cataract may be hereditary there is no doubt. I have had many patients with cataract whose parents and ancestors for several generations back had cataract. Most deaf mutes sooner or later become cataractous. That it may be due to consanguinity there is no doubt. I have had as patients several families every member of which had cataract. The father and mother of these families were first cousins. Dr. Hirschberg, of Berlin, first called my attention to the fact that rabbits kept for vivisection (being interbred) were frequently cataractous. Persons with choroiditis are most liable to become cataractous later on. As a rule, there is always more or less disease of the uveal tract in all cases of cataract. In other words, the parts of the eye upon which the nutrition of the lens depends are first affected, cataract being the sequence.

It is said that the eating of rye bread, the ergot of which constricts the blood-vessels of the uveal tract. produces cataract.

Prognosis.

There is no form of cataract, no matter how dense the opacity may be, that will produce total blindness, and if the disease is confined to the crystalline lens, there is always a certain amount of vision; therefore, for a favorable prognosis, the person should be able to

recognize lamplight in a darkened room, and tell from which direction the light comes. If he is unable to do this and is totally blind, we may be sure that there is disease of the retina, optic nerve, or some of the deeper structures of the eye, and an operation for cataract would not restore sight, and, if made, would reflect discredit upon the judgment and erudition of the operator. In glaucomatous cataract the prognosis is always unfavorable; also cretaceous and fluid cataract promise but little.

To insure good results, the pupil should dilate readily under the influence of a mydriatic; there should be no adhesions of the iris; the lachrymal apparatus should be free from disease; the incision should be smooth and uncomplicated; and the patient should be in good health and tractable.

Treatment of Soft Cataract.

Nothing but operative procedures will remove cataract. Drugs are not efficacious in the removal of cataract.

If it is a case of soft cataract, the operation of discission or needling should be employed, and if local anæsthesia is used, an 8 per cent solution of cocaine should be instilled into the eye a few moments before the operation. The pupil must be dilated *ad maximum* by atropine dropped into the eye several hours previous to the operation. In little patients the local anæsthesia, as a rule, will not suffice, as the dread or fright is much more formidable than the pain. In such cases chloroform or ether must be used.

Before proceeding to the steps of the operation, the instruments should be selected and antisepticized, seeing that all the necessary ones are at hand.

Steps of the Operation.

After washing the face, brows, and eyelids, the conjunctival sac should be flushed by a saturated solution of boric acid. The lids are then separated by a speculum (Fig. 16); then with the fixation forceps (Fig.



FIG. 16.

17) grasp the conjunctiva near the limbus, pass the needle (Fig. 18) obliquely through the cornea near the di-

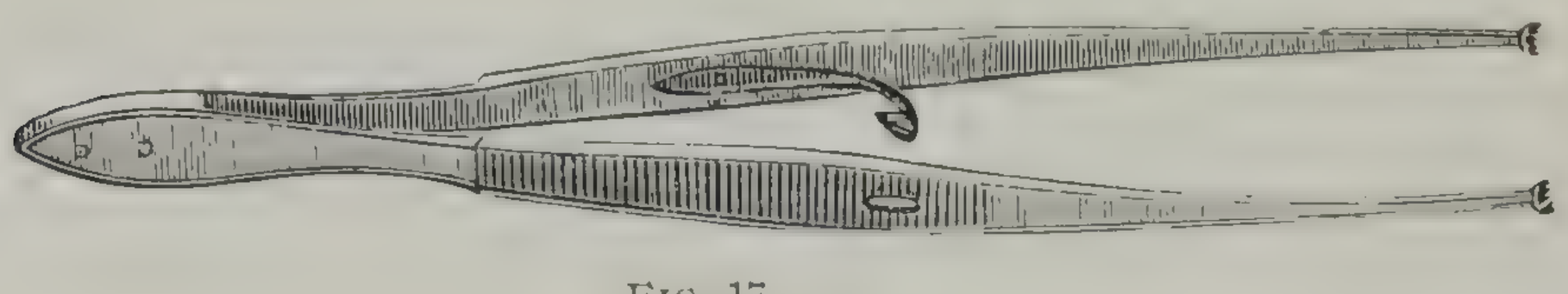


FIG. 17.

lated pupillary margin of the iris; extend the point to the opposite side; raise the handle, the cornea acting as

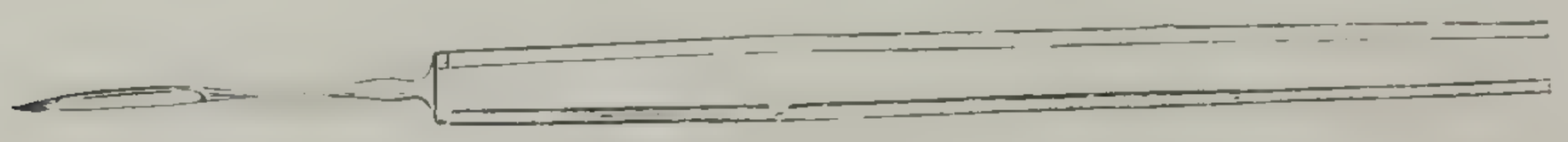


FIG. 18.

a fulcrum, and sweep the point through the anterior portion of the capsule and lens. A crucial incision may be made. Care should be taken not to make too extensive discission or to dislocate the lens. Remove the instruments and flush again the conjuntival sac and instill a few more drops of the mydriatic. The after-treatment consists in keeping the eye clean and the pupil thoroughly dilated. The eyelids should be closed and covered a few days with antiseptic gauze dressing. The mydriatic should be instilled every day, or often enough to keep the pupil thoroughly dilated, for at least two or three weeks. Frequently the operation has to be repeated before the lens is entirely absorbed; but the secondary operation should not be done for at least three months from the time of the first.

Treatment of Hard Cataract.

For extraction of hard cataract the preliminary steps are the same as for soft if extraction is to be made without iridectomy; but if iridectomy is to be made, it is not so necessary that the pupil be dilated. As in soft cataract, first anæsthetize the eye with cocaine, separating the lids by the speculum. With a narrow cataract knife (Fig. 19) make an incision to embrace about



FIG. 19.

one-third or two-fifths of the perimeter of the cornea, making the incision at the limbus fully within the cornea (Fig. 20). The size of the incision must be regulated

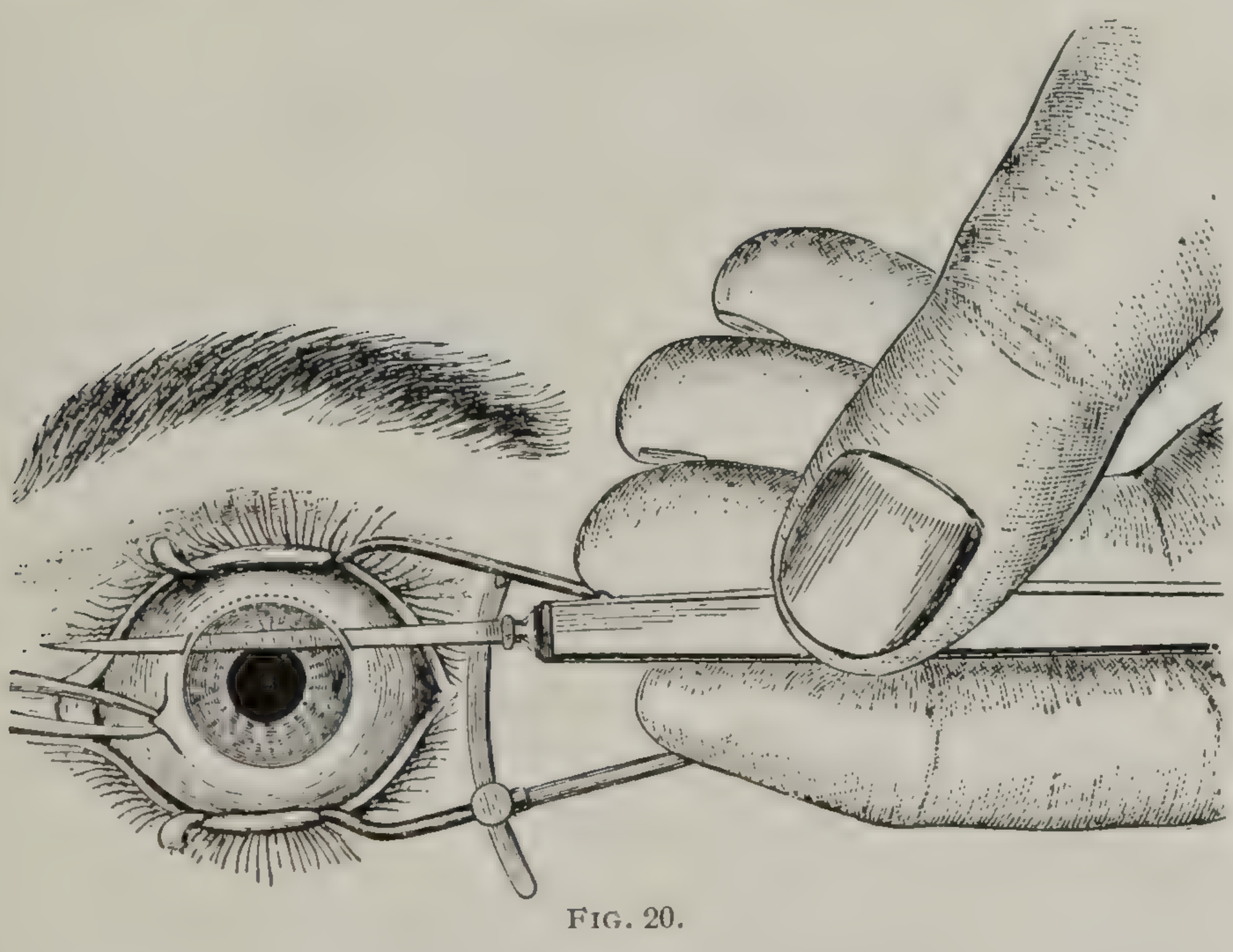


FIG. 20.

(to a certain extent) according to the size of the cataract. In making the incision, stand at the head of the patient, and if operating on the right eye, hold the knife in the right hand, and if on the left eye, in the left hand, the operator being ambidextrous. Pass the point of the knife through into the anterior chamber, skirting

well the border of the chamber and not going too far towards the pupil. Pass the knife directly on, making the counter-puncture so as to transfix about one-third of the perimeter of the cornea. Urge the knife forward, cutting first with the point, thus preventing any escape of the aqueous humor. Complete the incision by the withdrawal of the knife if possible; if not, by a few to-and-fro movements, make the knife cut its own way out; without any dragging upon the cornea, complete the incision very slowly. The incision finished, the forceps may be passed to the assistant, who should carefully steady the eye without pressure or traction. Then, if iridectomy is to be made, the iris forceps (Fig. 21) should be passed closed into the chamber to the

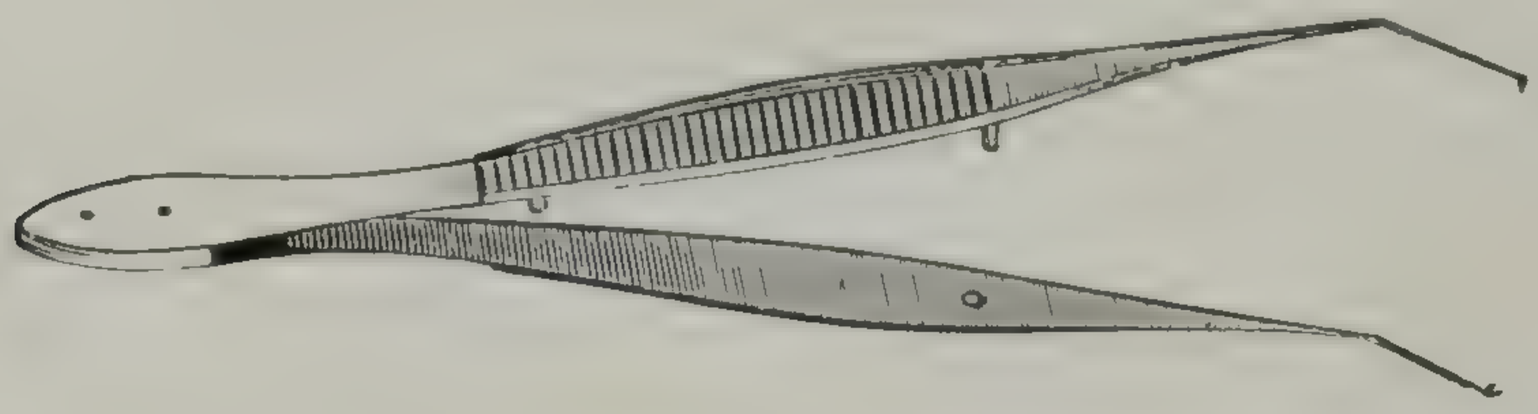


FIG. 21.

pupillary margin, at which point a small portion of the iris is grasped and drawn out and clipped away with the

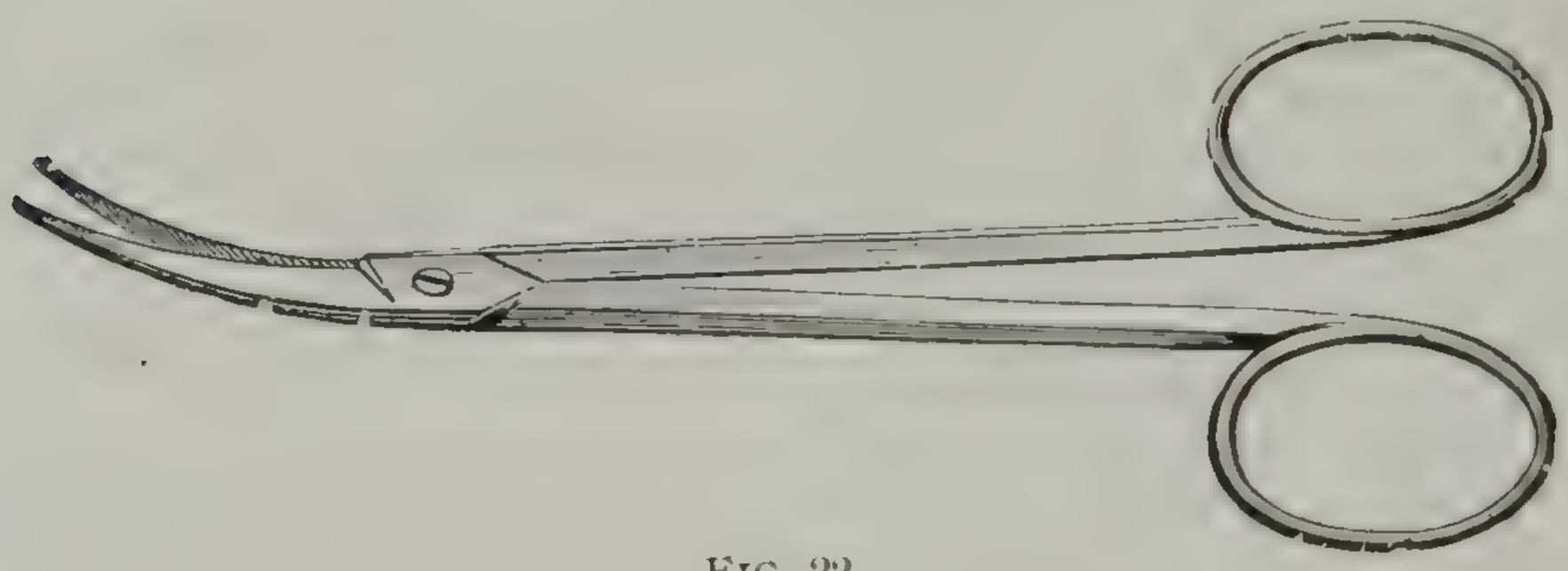


FIG. 22.

curved scissors (Fig. 22) close to the ciliary attachment. The forceps now should be taken from the assistant,



FIG. 23.

and with the cystitome (Fig. 23) passed flatwise carefully into the chamber, a crucial incision of the capsule

or a semicircular incision at its upper margin should be made. At this stage it is safer to remove the forceps and speculum, and then with the curette (Fig. 24) gently

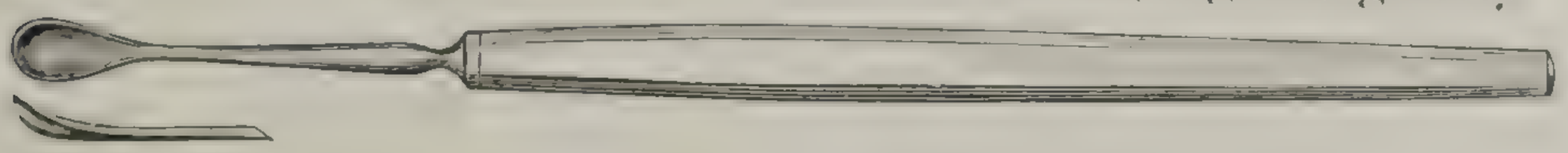


Fig. 24.

press the lower part of the cornea, tilting the inferior part of the lens backward and with a slight rotary motion of the curette; at the same time, with a gentle pressure of the margin of the lid against the upper flap of the wound, the lens will be urged from its bed and be presented into the wound (Fig. 25). A slight pressure

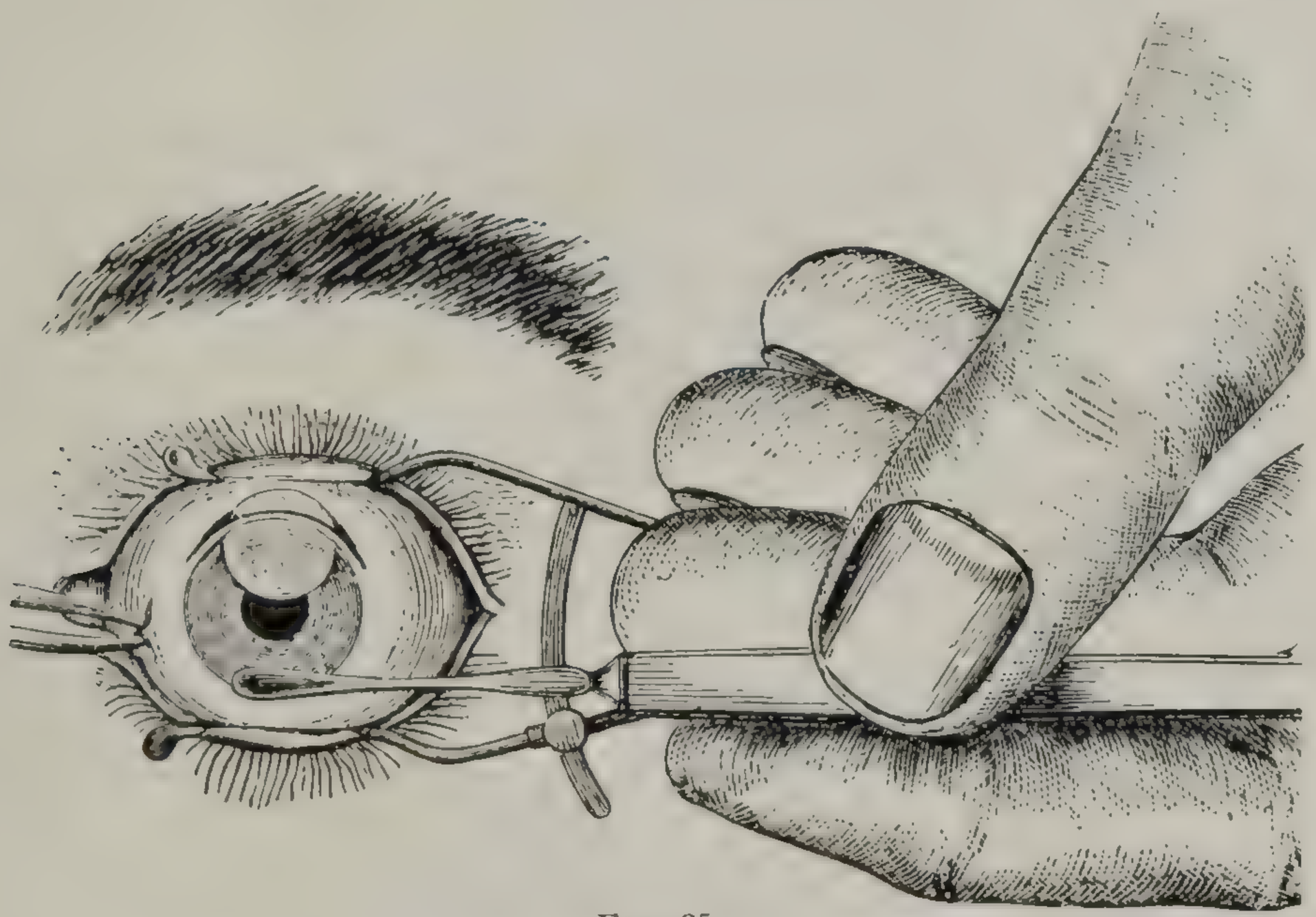


Fig. 25.

will cause it to be extruded. Frequently some portion of the lens will remain, which can be urged out by a gentle massage by medium of the lower lid. This is done by grasping the lashes of the lower lid and making careful massage. If all the particles of the lens do not readily come out, some may be left to be absorbed; however, it is much safer that the entire lens be removed. A black pupil to a certain extent is a guarantee that all the lens has been removed.

Dangers of the Operation.

The great danger of this operation is rupture of the delicate hyaloid membrane, and have an escape of the vitreous, or perhaps intraocular hemorrhage—casualties that most frequently result in blindness. After the extraction, the wound should be entirely free from any substance or débris, and the lips of the wound perfectly coaptated. Special care should be taken that there is no portion of the iris incarcerated at either angle of the wound. This may be secured by a flat curette (Fig. 26) gently and carefully passed between the lips

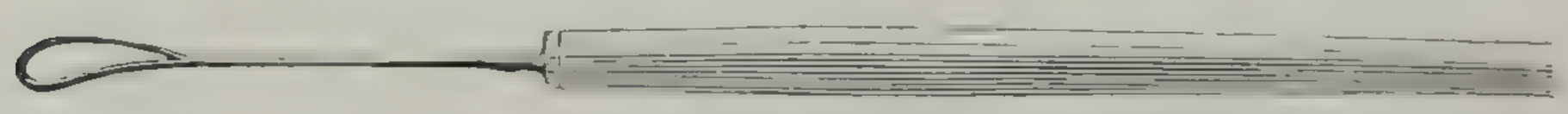


FIG. 26.

of the wound, spreading the iris into the chamber. The lips being perfectly coaptated and free from any débris, the conjunctiva should be again flushed with a boric acid solution, the lids closed, and antiseptic gauze bandage applied.

Bandage.

The bandage should be fastened by adhesive straps, one above the brows to the temples and one below the eyes to the cheek, neither compressing the eyeball. The bandage should never be placed around the head, for the reason that such a dressing, when the head is moved on the pillow, drags more or less upon the eyes.

After-treatment.

The after-treatment consists in removing the dressing every day and cleansing the eye with an antiseptic solution. I usually instill atropine every other day, and if there is any mucus on the lids, I remove it by means of absorbent cotton saturated with boric acid solution. The operated eye should be kept bandaged for at least a week or ten days, and then shaded for several weeks.

The glass which is to take the place of the lens removed should not be adjusted for at least six or eight weeks subsequent to the operation. If all goes well,

and there is no disease of the retina or optic nerve, the patient with the proper glass should see to read ordinary print.

DUBLIN.

At Dublin we meet five or six oculists, all clever gentlemen. Dr. Jacob (Fig. 27), the son of the cele-



FIG. 27. DR. JACOB.

brated Jacob, the discoverer of Jacob's membrane of the retina, is one of them. Drs. Fitzgerald (Fig. 28) and Swanzy are the oldest and most famous, but Drs. Story (Fig. 29), Maxwell (Fig. 30), and Benson (Fig. 31) are excellent, earnest workers in the field of ophthalmology. There are two eye and ear hospitals in Dublin. At one are Drs. Fitzgerald, Swanzy, and Maxwell,

who favor the extraction of cataract without iridectomy, while the others at the other hospital nearly always do iridectomy in this operation. I see several of the patients that have been operated on without iridectomy, and the results are good; the pupils, however, are not round, but of an oval shape, the iris having been caught



FIG. 28. DR. FITZGERALD.

up in the exit of the lens and incarcerated in the wound; in all there is some cortical portion of the lens left, but perhaps not more than there might be, had iridectomy been made.

Retinoscopy is quite extensively used by the Irishmen. Dr. Benson for trichiasis (distorted lashes) and

entropion (incurving of the lid) makes Van Milligan's operation. He splits the lid, either going through the tarsal cartilage, or below it just above the Meibomian glands, so as to leave all the lashes in the upper section; then from the lip of the patient he cuts a piece of mucous membrane the length of the free border of the lid



FIG. 29. DR. STORY.

and about an eighth of an inch wide, inserts the same by three sutures, one at either canthus and one in the middle at the upper lip, thereby lengthening, as it were, the conjunctiva (palpebral) and turning the lashes outward, and so correcting the entropion or trichiasis.

Since then I make a modified operation for entropion. It consists in removing an elliptical, narrow piece of integument from the lid. I split the lid at the intra-marginal space from the punctum to the external canthus, and in the slit I place the strip cut from the lid. This takes the place of the mucous membrane



FIG. 30. DR. MAXWELL.

taken from the lip as used by Dr. Benson. Otherwise I make the operation similar to that described by Dr. Hotz. I frequently combine canthotomy with the operation.

In case there be blood in the anterior chamber when making extraction of cataract, Dr. Benson drives it out

by injecting a carbolized solution of warm water, and at the same time, before removing the syringe, he sucks up the bloody contents of the chamber; by this means the chamber can be freed from any coagulated blood, which it is almost impossible to remove by the ordinary means. Antisepsis is conscientiously carried into ef-



FIG. 31. DR. BENSON.

fect in both hospitals. Drs. Story and Benson always have a cup of water boiling over a gas light in the operating-room; into this they dip their instruments before using them, the hot water not taking the edge from cutting instruments like most antiseptic fluids.

Before leaving Dublin, we visit the old home of the bard Tom Moore, No. 12 Aungier Street, where, over one hundred years ago, Tom Moore, the "poet of all nations and idol of his own," was born.

I have a bottle of *spiritus frumenti* and Mrs. T. a quarter-pound of tea bought on this occasion, October



FIG. 32. GIANT'S CAUSEWAY.

5th, 1887, from the spirit and provision shop where Moore's father used to sell the same things more than a hundred years ago. Before taking our departure from Dublin, we visit Guinness's brewery and drink the celebrated Guinness Dublin stout right from the famous tank (No. 50).

BELFAST.

Our allotted time for Dublin having expired, we take train for Belfast and the north of Ireland. As we approach Belfast we notice here and there that the ground is white—not with snow, but with the famous Irish linen spread out to bleach as taken from the factories of

Belfast. At Belfast I find Dr. Joseph Nelson working away at a case of astigmatism (mixed) complicated with homonymous diplopia for distant objects and heteronymous diplopia for near objects—a rare anomaly. The patient evidently had a slight insufficiency of the abductors, which accounts for the homonymous



FIG. 33. THE WISHING CHAIR.

diplopia for distant objects; and then, if there was insufficiency of the internal recti for near objects, this would be the solution for the crossed diplopia when reading. Dr. Nelson is a very pleasant gentleman and "well up" in ophthalmology.

GIANT'S CAUSEWAY.

From Belfast we run down to the Giant's Causeway (Fig. 32). This is a most curious phase of geological formation. The 7th of October finds us with our guide standing on the Basaltic Rock, Mrs. T. sitting in the Wishing Chair, looking off on the Irish Sea (Fig. 33).

This basaltic formation is arranged in pillars many feet in height and some of them several feet in diameter. We notice most of them are hexangular or octangular. The sections are concavo-convex, the top side being convex. The columns present a very picturesque appearance, resembling ruins of old castles. The Giant's Causeway is certainly one of the most remarkable structures in the world.

"Awed to deep silence, they tread the strand
Where furnaced pillars in order stand;
All framed of the liquid burning levin,
And bent like the bow that spans the heaven;
Or upright ranged, in wondrous array
With purple or green o'er the darksome gray.
The solemn rows in that ocean den
Were dimly seen like the forms of men;
Like giant monks in ages agone,
Whom the god of the ocean had scared to stone;
And their path was on wondrous pavement old,
In blocks all cast in some giant mould."

AYR.

On the evening of the eighth of October we take the steamer from Belfast for Ayr, the home of the peasant poet Burns, where we spend a day or two visiting the home and haunts of this poet of nature. The old tavern, Whip Inn, is still there, with the smiling bar-maid to hand you a glass of the good old Scotch ale (Fig. 34).

"When chapman billies leave the street,
And drouthy neebors neebors meet,
As market-days are wearing late,
An' folk begin to tak the gate;



FIG. 34. TAM O'SHANTER INN AND BURNS' COTTAGE.

While we sit bousing at the nappy,
An' getting fou an' unco happy,
We think na on the lang Scots miles,
The mosses, waters, slaps, and styles,
That lie between us and our hame,
Where sits our sulky, sullen dame,
Gathering her brows like gathering storm,
Nursing her wrath to keep it warm."



FIG. 35. THE TWA BRIGS.



FIG. 36. ALLOWAY KIRK AND BURNS FAMILY TOMB.

But we must not tarry with the bards at the present time, but go to Edinburgh, where a few days are to be spent with the oculists and aurists.

EDINBURGH.

Here we find the distinguished oculists, Argyle Robertson (Fig. 37) and George Berry (Fig. 38). From



FIG. 37. DR. ARGYLE ROBERTSON.

their writings and good work, they are known throughout the ophthalmological world. A similar hospitality and reception is experienced with these gentlemen as

with those in Ireland. Dr. Argyle Robertson is one of the pioneers of ophthalmology, and is recognized authority. He courteously invites me to visit his clinique at the University, in which he is professor of ophthalmology. He is a good operator, carrying an unusually steady hand, especially for a man of his age. I



FIG. 38. DR. GEORGE A. BERRY.

see him make several operations for cataract. He makes his incision entirely within the cornea, and always makes iridectomy. He makes a small iridectomy, and afterwards uses eserine to contract the pupil, instead of atropine to dilate it; with eserine he thinks that there is not so much danger of enclamping the iris in the angles of the wound.

Dr. Berry was called away to the country soon after my arrival here, and I only had the pleasure of seeing him operate once for cataract; this approached an ideal operation, the doctor being very dexterous and painstaking.



FIG. 39. TOMB OF SIR WALTER SCOTT.

LIVERPOOL.

October 15th we take the Midland for London via Liverpool and Birmingham, spending a few days at Melrose, Abbotsford, and Dryburgh (the land of Scott), reaching Liverpool the evening of the 18th.

Dr. Edgar A. Browne (Fig. 40) is the one person in Liverpool whom I wished to see, and I find him an enthusiastic instructor and an indefatigable worker. Liverpool possesses, thanks to his efforts, one of the fin-



FIG. 40. DR. EDGAR A. BROWNE.

est, if not the finest, ophthalmological hospitals of all Europe. In his clinique I saw several interesting cases.

On the second day a case of luxation of both crystalline lenses was seen at the clinique. This was caused by an altercation on the part of the woman with her step-son. This most extraordinary condition was brought about by a clutch of the fists of the step-son, rupturing both globes near their sclero-corneal junction, extruding the crystalline lens of each eye from their lodgement, landing them upon the sclera beneath the conjunctiva and the superior lid, near the equator at the upper and inner portion of the globe. Here the

lens could be distinctly seen through the conjunctiva lying on the sclera. The lens of the right eye lay on the sclera at the temporal side of the cornea, while that of the left was also resting on the sclera at the nasal side. This was a most unusual case—both eyes receiving such serious injury at one and the same time.

In a letter written to me after my return to America, Dr. Browne says:

"I am not in favor of any particular operation. I habitually do simple extraction and extraction with preliminary iridectomy done six weeks before. I do the simple in some cases,—cortical cataract, and where I have a good nurse I can depend upon. I do the preliminary iridectomy in aged and weakly people, diabetic, gouty, and others who may be likely to go wrong. I never do the iridectomy at the time unless I am driven into a corner. The advantage of the preliminary operation are great—no bleeding; therefore incision in capsule made with care and certainty—a small proportion of cases with iridectomy done at the time have hemorrhagic iritis leading to thickened capsule—altogether the risk of iritic complications is much lessened by preliminary iridectomy allowed thoroughly to heal. But I attach the greatest importance to avoiding septic infection of the wound. About 75 per cent of the cases operated on are naturally sufficiently aseptic to heal by first intention; the remaining 25 per cent require disinfecting. I do not believe in infection by instruments, but I cleanse my instruments by soaking in a solution of ammonia and running a good stream of hot water over them to remove all greasiness, then they are placed in absolute alcohol till wanted. This does not blunt the cutting edges of knives or scissors.

"The main sources of infection are the ciliary borders and lachrymal passages. I keep the eye for a week or so well washed out with weak antiseptics, and operate with it well washed with a solution of oxycyanide of mercury, 1:1500 or 2000. I use the old-fashioned pad or bandage. Don't bother to examine the

eye unless obvious signs of going wrong, and let the patient sit up in an easy chair after 48 hours. Thus I consider the important thing is to select an operation that leaves as small surface for infection as possible. Sometimes that is better accomplished by the preliminary iridectomy than by the simple. With the simple extraction the corneal wound is necessarily larger, and if the lens is hard and large, it scrapes and tears minute wounds in the iris as it passes over it—these microscopic wounds with a little lens matter probably entangled are just exactly favorable sites for infection. When the edges of the iridectomy are allowed to heal, they present merely cicatricial tissue and are probably less liable than even the natural surface to form reception surface for pyogenetic germs.

"I attach the greatest importance to making the wound clear of any fragment of lens matter or capsule. I carefully clear out everything I can lay hold of with a pair of unlocked forceps, I syringe the wound where there is loose sticky cortical matter with a warm boracic solution. Occasionally I syringe the anterior chamber.

"To sum up, I think as far as mechanical means go, the best operation is the one the operator is most accustomed to. By experience he learns the minute precautions required and applies his knowledge with most ease. To the patient I think it is a matter of small moment whether he has a coloboma iridis or not. If he has healing by first intention he has (caeteris paribus) a good eye. I can get equally good results by either or any method."

E. B.

BIRMINGHAM.

On the twentieth we take train for Birmingham, where is located the well-known oculist, Priestley Smith, who has written much on the subject of glaucoma. I find Dr. Smith at 21 Broad Street, Birmingham. An hour is pleasantly spent with him in examin-

ing instruments, of which he is the inventor. Dr. Smith always makes an iridectomy preparatory to extracting cataract. He thinks that the hyperopic eye is more liable to glaucoma, rather from its size and shape than from an over-use of the power of accommodation.

KENILWORTH.

Leaving Birmingham, we go on to Kenilworth, Warwick Castle, and Stratford-on-Avon, spending a day or



FIG. 41. SHAKESPEARE'S HOUSE.

so at Shakespeare's birthplace, and then on to London, reaching the metropolis on the 22d of October. Here we spend one month in the ophthalmological hospitals and cliniques.

LONDON.

Our time in London is mostly spent in histological work with Prof. Schaeffer, of the University of London, Gower Street, and at the renowned Royal Ophthalmological Hospital (Moorfields), near Bishopgate Station. At Moorfields we find the work going on much the same as at our first visit ten years ago, with a large staff of oculists, many of whom were there at our first visit; yet several of the old landmarks are no longer to be seen. Bowman (Fig. 42), Critchett (Fig. 43), and Wells are gone, but their works still live. The principles derived from their investigations by long experience and conscientious assiduousness are still carried out by their successors. Space will not admit of extended biographical sketches of these devotees to ophthalmology, but we place here the photographs of a few of them.

Nettleship (Fig. 44) was one of the younger men at the time of my first visit. He now occupies somewhat the place of Dr. Solberg Wells. His small book on ophthalmology is one of the most comprehensive textbooks extant and is widely read throughout the ophthalmological world.

We will not go through the routine of a month's experience in the metropolis, but will relate the events of a single day. November 14, 1887, is a fair exposé of how the time passes to the medical student in the world's metropolis. As soon as I can get my breakfast in a London boarding-house, I hurry away to King's College to meet Prof. Carnow, the dean of the college and professor of anatomy, to whom I have a card of introduction from Mr. Richard Cross (Fig. 46), of Bristol, whom I met in Washington at the Medical Congress. I reach the college at 9 a. m., just in time for the lecture, which is given in an able manner. He lectures on "The Gluteal Region."

On the presentation of my introduction, the doctor invites me to his private chamber and gives me a card

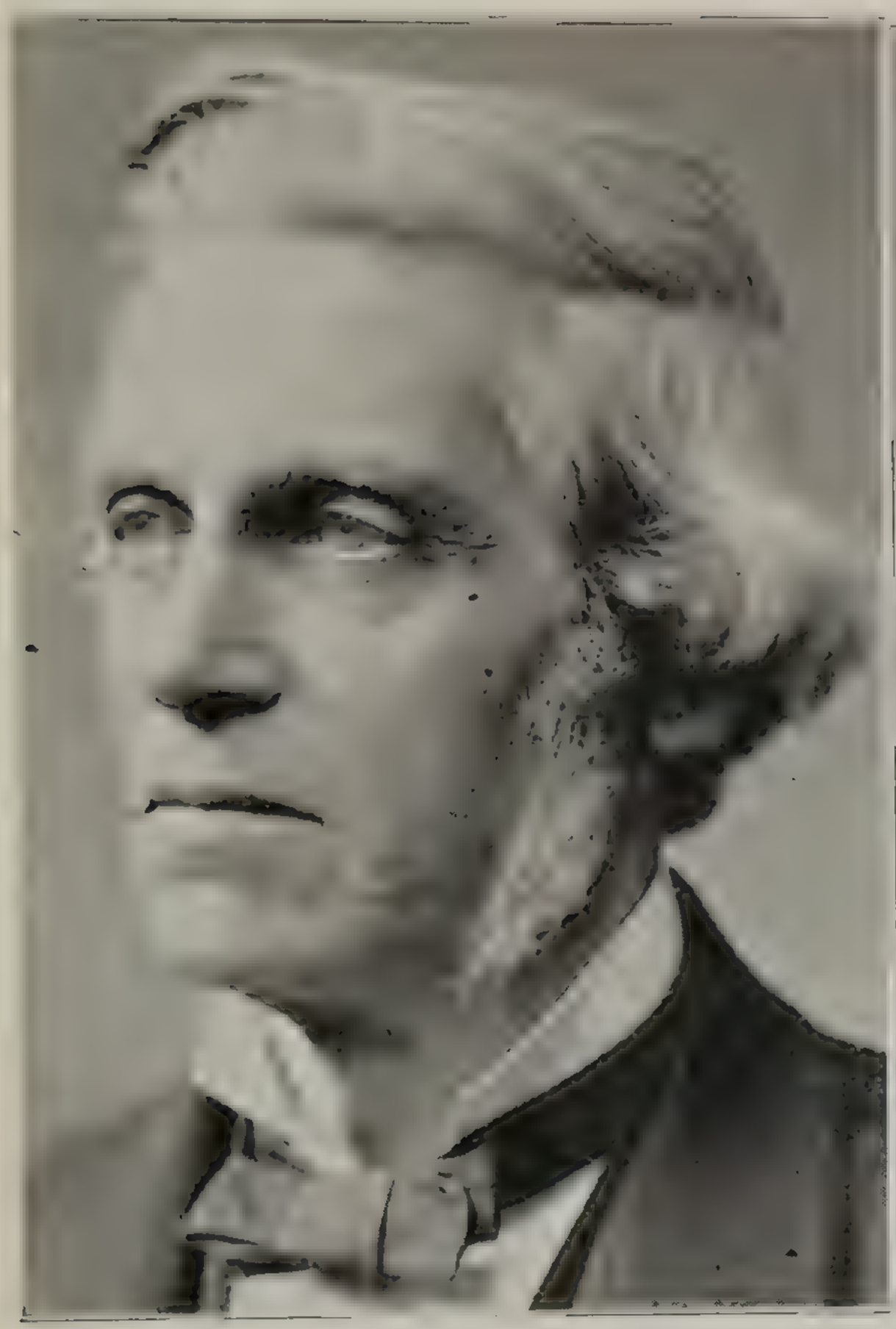


FIG. 42. DR. BOWMAN.



FIG. 43. DR. CRITCHETT



FIG. 44. DR. NETTLESHIP.

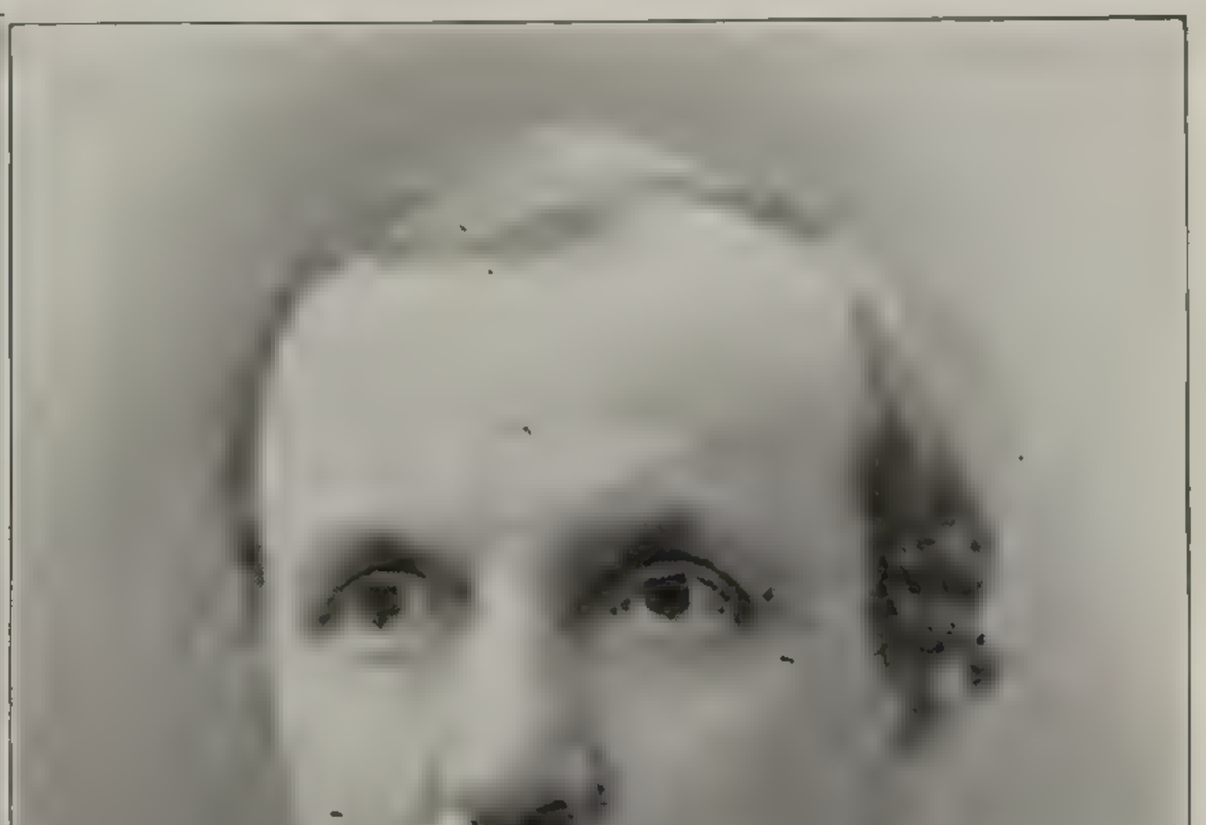


FIG. 45. DR. HUTCHINSON.

of introduction to the illustrious Sir Joseph Lister, Bart., who is to make excision of the knee-joint at King's College Hospital at 2 p. m.



FIG. 46. DR. RICHARD CROSS.

MOORFIELDS.

And now I am due at the Royal Ophthalmological Hospital—Moorfields, so I take an omnibus to Bishopgate station, or Liverpool station (Fig. 48), near which is located the renowned Moorfields. Here I find a crowd of

eye patients, as is always the case, especially on Monday. This hospital is a charitable institution, and none but the indigent are supposed to be treated here; however, many others take advantage and come. People gather here not only from the British Isles, but from



FIG. 47. CHARING CROSS.



FIG. 48 WATERLOO BRIDGE.

different parts of the world, as they know that the best authority is to be found at this institution. (I remember one very interesting case, but very sad, that came here from the United States during my first visit, ten years previous. The patient, a child, was totally blind. The history as related by the parents was as follows:

The father was an undertaker, and one day in sport the brothers of the child put it into a coffin and closed the lid; this so frightened the little one as to throw it into convulsions, producing instantaneous blindness, from which the child never recovered. The examination revealed white atrophy of the optic nerve—a condition of irremediable blindness.) At Moorfields there are six surgeons at work every day. The patients assemble in a large waiting-room, and are assigned to the different surgeons. They come filing up in six rows of some sixty feet deep, awaiting their turn. If the patient has only some slight trouble of the lid or conjunctiva that requires local treatment only, he receives the treatment immediately and is dispatched with a prescription, if necessary, with instructions when to return; but if he has some disease of the deeper structures of the eye, he is referred to the dark room, where a more careful examination with the ophthalmoscope is made and his disease diagnosed; or, if he has some error of refraction, he is then referred to the assistant whose duty it is to work out the anomalies.

Four or five hundred eye cases are seen at this hospital daily. Among those that came especially under my notice this morning are the following:

First, a detached retina, in a lad of nine years; it is a recent case, of about a week's duration. The vitreous is a little cloudy, but the fundus of the eye can be easily seen, with the upper and inner part of the retina near the optic nerve detached from the choroid.

The next case is a hyperopic patient with extreme tortuosity of blood-vessels at the disc. Some seventeen or eighteen large vessels are seen going to and from the optic nerve.

Next comes a case of extraordinary deep cup of the disc (physiological). It is singular that we should have this cup in an occasional eye with good vision and normal tension, whereas in a very large per cent there is no excavation at the disc of the normal eye. The physiological cup (Fig. 49) is confined to the center of the disc, and does not indicate any abnormal condition of the eye, whereas the pathological cup embraces the en-

tire disc (Fig. 50), and the blood-vessels dip, as it were, from its edge, and this always is the sign of that most dreaded disease, *glaucoma*.

Next comes an interesting case of choroiditis, with

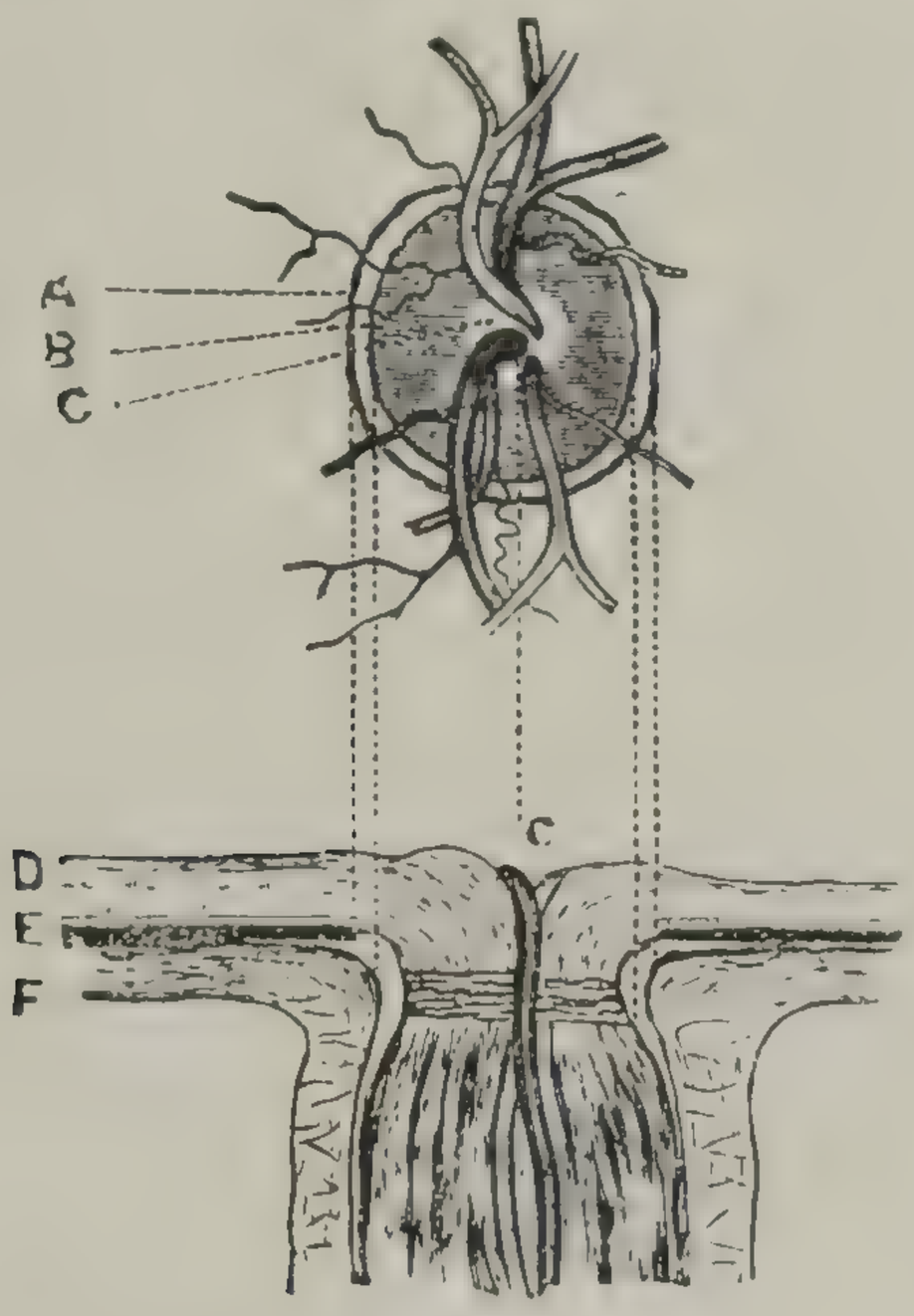


FIG. 49. NORMAL DISC.

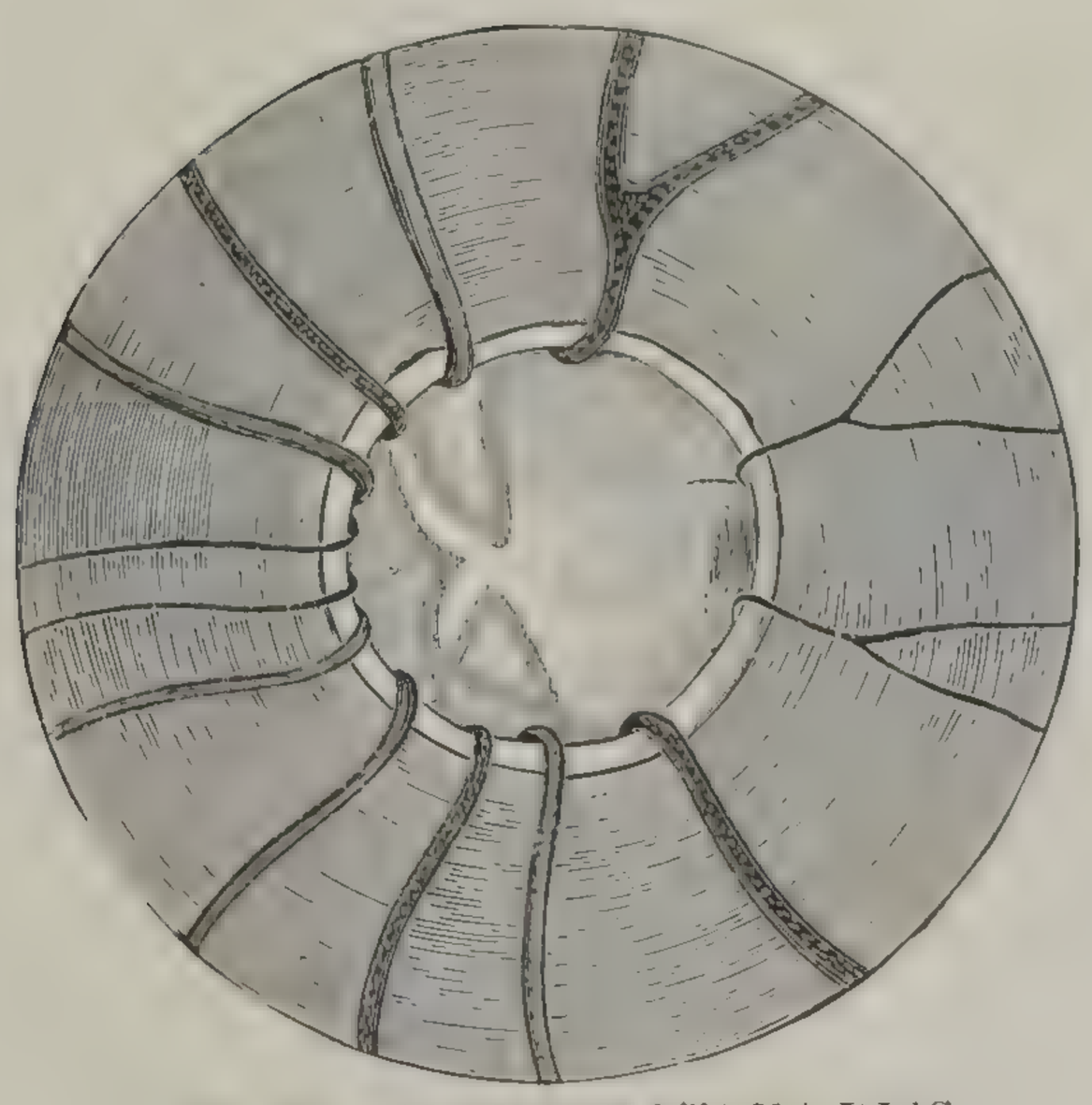


FIG. 50. GLAUCOMATOUS DISC.

some atrophy of the nerve and retina. The most interesting case of the morning is that of the remains of the hyaloid artery, attached at the center of the disc and flapping to and fro in the vitreous, in a child of eight



FIG. 52. MR. POWER.

(See p. 6.)



FIG. 51. DR. JULER.

years. It is the first case I had seen where vision is normal. The piece is apparently about one-fourth of an inch long, and grayish white. Several cases of myopia and hypermetropia, with and without astigmatism, fall to my lot to work out by the ophthalmoscope and retinoscope.

At Moorfields one has a fine opportunity of practicing retinoscopy, as there is always an abundance of material, more than can possibly be utilized; several hundred patients stand ready to be looked at in the ophthalmic or dark room. Going to the operating-room, one always finds, at certain hours of the day, some operation of the eye. I will enumerate those that I have witnessed to-day. Mr. Fay has finished his operations before I reach the operating-room. Mr. Lang makes iridectomy on an old inflamed eye where there has been hypopyon and synechia; the pupil was occluded and the iris tied down all around. He used a narrow Graefe knife, instead of the keratome, and with a hook he got under the iris, loosened it from the capsule, and then removed a segment. Dr. Lang speaks of the importance of an early iridectomy in these cases where there has been ulceration of the cornea, in order that the bulging or staphyloma of the cornea may be prevented.

Mr. Cilcox follows Mr. Lang in the operations. He has two iridectomies, one cataract, and two operations for distichiasis of the upper lid. In making iridectomy he also uses the narrow cataract knife. From the operating-room I return to the ophthalmic room and resume the working out of the numerous cases of ametropia.

In retinoscopy one reflects the light by means of a flat mirror into the pupil of the eye, in which a shadow will appear and move in the same direction that the mirror is rotated, if the eye be hyperopic, and the reverse if it be myopic. The glass that dissipates the shadow or causes it to slightly move in the contrary direction, placed before the ametropic eye, will indicate the amount of ametropia and the glass to be worn to correct the anomaly.

This is a very good supplementary method of working out cases of ametropia. It is what my friend, Dr. Zieminski (Fig. 53), of Warsaw, called the lazy English method.

At one o'clock we take leave of Moorfields and cross to Piccadilly Street to our favorite grill-room—a well-known place to all medical students for excellent mutton chop, cauliflower, and English ale. Luncheon dispatched, we take omnibus for Chancery Lane or King's College Hospital, where we are to meet the originator



FIG. 53. DR. ZIEMINSKI.

of antiseptic surgery, Sir Joseph Lister, Bart. At 2 p. m. we reach the amphitheatre—just on time; and as the professor enters, the card of introduction is presented, and we are cordially invited to a seat in the front row of the visitors' circle.

Prof. Lister is a typical Scotchman. He has gray

side-whiskers, is not much above the medium height, but of good weight and well proportioned.

The patient is a woman who has suffered from rheumatic fever, a stiff knee resulting. Prof. Lister thinks there may be anchylosis, and if so, excision of the joint will be necessary. The preparations for the operation are made and the patient chloroformed, but a little force straightens the limb, and we are deprived of seeing Sir Lister operate, for this is the only case that he has for the afternoon. However, we know what his antiseptic treatment is, and it was the man that we wanted to see rather than the operation, so we are not detained beyond the hour; and as Sir Henry Thompson is to lecture on "Stone in the Bladder" at the University College, Gower Street, at three, we take leave of Prof. Lister and hasten on to the University. It is now just ten minutes of the hour, and we are at least a mile and a half away and not very near any of the Metropolitan stations; so we jump into a hansom, with the instruction to get to the University, Gower Street, in ten minutes. We arrive just at the moment; the amphitheatre, however, is full, though we find footroom. Sir Henry Thompson has retired from actual work, but is just now giving a special course of four lectures on the bladder. He begins his lecture at the moment as announced; subject, "Extraction of Large Stones from the Bladder."

Sir Henry is rather a striking-looking personage, somewhat above medium height, with gray mustache, otherwise clean-shaven face, straight gray hair cut square all around, steel gray eyes, and classic features.

His style of delivery is rather dramatic, but, upon the whole, quite pleasant. He tells the story plainly and clearly, with but few strokes of the crayon, which are illustrative of the subject. He says that the suprapubic operation is the ideal operation. A stone larger than three ounces, he says, "can not be taken through the perineum without laceration; and besides, in the low operation there is always more or less extravasation of urine to contend with, and there is also danger of cutting the rectum; in the high or suprapubic opera-

tion there is scarcely any danger from cutting the supra-pubic artery. The accident has happened with me but once, and then hemorrhage was easily controlled. In the high operation the urine is not in the way."

He shows us the largest stone that he ever extracted; it weighs fourteen ounces. It was taken from a man over sixty years of age. The man had carried it for several years, and for twelve years was obliged to remain in bed and compelled to lie on his back. There are two grooves, one on either side of the stone, just in line with the ureters, and they were cut by the flow of urine as the mountain creeks cut their way, making channels in the rocks. The stone is pure uric acid. He has sawn it in two and polished the surfaces.

The hour at a close, we take the Metropolitan Railroad (underground) for King's Cross, or Gray's Inn Road, where Mr. Lenox Brown is to give a lecture at 4:30 p. m., at the Central London Hospital for Diseases of Throat and Ear. The subject of his lecture is "Malignancy of the Larynx in Relation to the Illustrious Patient at the time Suffering from an Affection of the Larynx."

This hour closes the day among the doctors, in London, and as it is nearly dinner-time, we take omnibus for New Oxford Street, arriving at 37 Bedford Place, Russell Square, where we meet Mrs. T., who has spent most of the day at the British Museum. A good English dinner is awaiting us.

But we must not tarry longer at the great metropolis; so we will say good-bye to foggy, gloomy London, and take the train for bright, gay Paris.

PARIS.

After a short but pleasant stop in Dieppe and Rouen, we reach Paris on the evening of the 23d of November, and as soon as we are comfortably located in *pension* we begin to make the rounds of the oculists. In the

ophthalmological field we find Paris to be taken mostly by foreigners, for out of the half-dozen celebrated ophthalmic surgeons only one is a Frenchman—viz., Dr. Abadie; Dr. Panas being Greek; Landolt, Swiss; Galezowski, Polish; De Wecker and Meyer, German. Dr. Sichel is no longer in active practice here. These men undoubtedly stand at the head and are among the leaders of the world at the present time in this science.



FIG. 54. DR. LANDOLT.

Landolt's Clinique, No. 27 Rue St. André des Arts.

Dr. Landolt (Fig. 54) is the first man we call upon; we find him at 27 Rue St. André des Arts. Dr. Landolt

just at this time is the only man in Paris who exclusively adheres to the extraction of cataract with iridectomy, holding that it is safer and the subsequent results are better. All the rest favor the simple operation. Dr. Meyer is inclined to go with the Germans and only operate without iridectomy in selected cases. Dr. Panas makes the operation almost invariably without, and, as far as my observations go during my month's sojourn with him, his results are most flattering. He almost invariably gets a perfectly circular pupil. Dr. Landolt speaks of his operation of enucleation in which he uses only three instruments: speculum, forceps, and scissors. He is particularly well up on the subject of refraction and accommodation; he explains the fact of many strabismus patients having monocular diplopia by there being two yellow spots in this eye, the second macula having developed by the alternating strabismus, the image impinging part of the time within the macula lutea, thus making this point more sensitive.

For convergent strabismus of any considerable degree Dr. Landolt makes advancement of the external rectus—and, in fact, this is the custom of the Parisian oculists. Dr. Landolt frequently depends on this without making tenotomy of the internal rectus. He also takes advantage of decentering glasses in these cases. (In the majority of cases of strabismus I have found simple or partial tenotomy of the short or overdeveloped muscle to be sufficient. It is only in exaggerated cases that I resort to advancement of the insufficient muscle.) Dr. Landolt tells me that he never opened a lachrymal abscess in his life by cutting through the cheek. He slits both canaliculi, or joins the two, and then treats the abscess through the large canal.

Dr. De Wecker's Clinique, 55 Rue de Cherchemidi.

Our second visit is to Dr. De Wecker's clinique, 55 Rue de Cherchemidi. Dr. De Wecker (Fig. 55) has a very large house with many rooms and many patients. We are somewhat struck with the singular state of affairs here. We find several rooms full of patients of

all kinds, poor and rich, as it seems; doctors, students, and patients all together, rooms dark. Some of the patients are talking and laughing, some crying and screaming, while the doctor is treating or operating on



FIG. 55. DR. DE WECKER.

one or another. Dr. De Wecker makes his operations in the darkened room by the electric light. In doing extraction of cataract he frequently, by means of the forceps, removes the anterior capsule of the lens. He makes a pretty operation for keratoconus (conical cornea) by cutting out an elliptical piece of the cornea, making the first incision with a narrow knife and the others by scissors, and then closing the wound by horse-

hair sutures. Dr. De Wecker is one of the most scientific men in ophthalmology. He has had a very extensive experience. It is to him that we are indebted for the introduction of that most valuable drug—jequirity, used in the treatment of old persistent granular lids and disease of the cornea.



FIG. 56. PROF. PANAS.

Prof. Panas's Clinique, Hôtel-Dieu.

Prof. Panas (Fig. 56) begins at 9:30 a. m., first treating the out-patients, then going to the amphitheatre, in another part of the hospital, where he lectures for an hour or an hour and a half, and then makes his operations, thus using three or four hours. Dr. Panas always washes out the anterior chamber with a borated solution after extracting cataract. He makes the extraction without iridectomy and with most beautiful results, doing perhaps the prettiest operation of ex-

traction of any man that I have met or seen in Europe.

Prof. Panas is the only oculist who holds a public clinique in Paris, his being a Government institution, although all the other oculists have students following them and the advantages with them are equally good as at the Hôtel-Dieu. At Panas's there are many students, especially Greek and French, with now and then a German or Pole, with a few English and Americans. As soon as the lecture is over, there is a stampede for the operating-table—what almost amounts at times to a squabble, especially among the black-headed Greeks, in their efforts to get the most desirable positions. There is one black, round-headed, raven-whiskered, myopic little Greek who always rushes from the clinique to the amphitheatre, that he may get a front seat near the table, and then, as soon as the lecture is finished, he makes a lunge for the table near the head and clings to it while the servants wheel it from the wall into place, with his little black head and whiskers stuck down in front of the face of the patient, only allowing the rest of us to see through between his ears and his head, or perhaps from an elevated position on chairs. He is seen at all the eye cliniques of Paris, and always in the same attitude. We find him atPanas's, at Galezowski's, at Abadie's, at Landolt's, at Meyer's, and at De Wecker's, but mostly at Panas's. While going through Dr. Panas's wards with him, he wants to know if he has not seen me here last year. I say no; that I was in Paris ten years ago. He immediately remarks that he remembers me very well; whereupon the gentlemen compliment him on his good memory, and I could not have the heart to tell him that it was last week at his clinique that he had first seen me.

The following is a letter received in reply to an inquiry as to the best method of treating cataract:

Paris, France.

My Dear Doctor:

My ideas concerning nuclear cataract may be résuméd in the following:

1. Its frequency is much greater than up to this time has been thought.

2. Clinically it can not be distinguished from that called stratified (Schicht-Staar-von-Graefe).

3. Whence, in presence of an infantile cataract, called zonular, one ought to adopt a uniform operative process applicable to the two varieties, hard and soft.

4. According to my thinking, this should be only (crosswise) linear extraction with iridectomy made at the same time, rather than in two operations.

5. In case that the extraction, in consequence of some adhesions, should not be complete, I do not hesitate to take away the whole crystalline system with the curette. It is understood as a matter of course that anesthesia, either by chloroform or ether, should be the rule.

6. By operating in this way one obtains good immediate optic results with less reaction than by the method of dissecission with the needle, and one does not risk the abandonment of any swollen masses, or, worse still, an atrophied cataractous nucleus in the eye.

7. The operations that I have made have proved to me that nearly one-half of infantile cataracts called stratified possess a nucleus, similar or identical with that of senile cataract, except that its consistency is that of yellow wax, as De Wecker has pointed out in his atlas concerning the pathologic anatomy of the crystalline lens.

Believe me most sincerely yours,

May 28, 1892. Panas.

P. S.—After treatment nothing but antiseptic bandage held in place for three or four days.

Dr. Galezowski's Clinique, 23 Rue Dauphin.

Dr. Galezowski (Fig. 57) perhaps has the largest clinique in Paris. He has now operated for cataract on over 130,00 patients, and sees about 1,200 new patients a year. Here is a good place for the study of internal diseases of the eye. Dr. Galezowski operates

for cataract frequently without iridectomy; he does not wash out the anterior chamber. He sometimes makes what he calls a sphincterectomy, cutting away



FIG. 57. DR. GALEZOWSKI.

only a small portion of the circular fibres of the iris, thus avoiding the disfigurement by a large iridectomy, and accomplishes the advantages, as he thinks, of a more extended iridectomy. On making iridectomy for leucoma or glaucoma he withdraws the keratome very quickly and the aqueous spurts out, the iris following, and is seized without introducing forceps into the anterior chamber. (This procedure struck me as somewhat hazardous, and I asked if there was not some danger of intraocular hemorrhage from the sudden escape of the aqueous, but he assured me that he had never experienced such a casualty.)

Dr. Chas. Abadie's Clinique, 172 Boulevard St. Germain.

Dr. Abadie (Fig. 58) is one of the most scientific oculists in the world, and is the author of a most excellent text-book on diseases of the eye. He operates for cataract without iridectomy, as a rule, but selects his cases.



FIG. 58. DR. ABADIE.

The following is a letter received in reply to an inquiry as to the best method of treating cataract:

Paris, France.

Dear Doctor Tiffany:

The interminable discussions which have taken

place regularly in all tongues, in order to determine whether it be better to make the operation for cataract with iridectomy or without, seem to me to be without any practical interest. Each method, in fact, has its own advantages and its disadvantages, which balance and counterbalance each other so nearly that it is almost immaterial to me whether one or the other be employed.

The important point is, to avoid infection of the wound and to accomplish the result of giving sufficient vision for reading. Now, to attain these two results hardly either one of the two methods has a real superiority over the other.

Operating without iridectomy one has a pupil, more beautiful from an aesthetic point of view, more satisfactory from an optical point of view; but one is exposed to prolapse of the iris, the clearage of the cortical mass is much less easy; it seems to me then that this process should be reserved for those chosen cases in which the cataract has come to a complete maturity, and in which the iris, being very contractile, tends to re-establish itself in place. But we must recognize that to-day these cases constitute almost the exception. Patients come to consult us as soon as their vision has become sufficiently impaired to prevent their reading. We are obliged to operate upon immature cataracts, and the most important step of the operation is the clearing of the pupillary field. In such cases, by far the most numerous, iridectomy is preferable.

Dr. C. Abadie.

Dr. Meyer's Clinique.

Dr. Meyer (Fig. 59) is celebrated for his success with keratitis and affections of the conjunctiva. He has a great many children in his clinique, and says that he very often traces the disease of the conjunctiva to affections of the nose. He regards rhinitis or catarrh of the nose as a frequent cause of the conjunctivitis and corneitis, and so treating these gets unusually good results.

The following is a letter received in reply to an inquiry as to the best method of treating cataract:

Paris, France.

Dear Doctor Tiffany:

I consider that extraction with iridectomy, by avoiding prolapse of the iris, gives more security to the one



FIG. 59. DR. MEYER.

operated on and more tranquillity to the operator, with results as good as extraction without iridectomy. Beginners should always operate with iridectomy, and, if possible, practice iridectomy several weeks before the extraction.

However, since Daviel's time, a number of cases of senile cataract have been cured by extracting without iridectomy, and this fact obligates us to seek under what conditions we may extract cataracts without prac-

ticing an iridectomy and without exposing the patient to prolapse of the iris.

For my part, I operate without iridectomy in from 50 to 60 per cent of the following cases:

1. Patients without infirmities (as without general



FIG. 60. PROF. CHARCOT.

weaknesses), such as might give rise to nervousness; viz., diseases of the bladder, bronchi, asthma, etc.

2. Patients with good reaction of the pupil.

3. Patients without an increased intraocular tension.

4. Those who present after the extraction a *round*

and central pupil without any tendency of the iris to displace itself in the direction of the wound.

The patients are operated upon in their beds without being removed.

The flap embraces almost a half of the cornea by means of an oblique section of the limbus of the conjunctiva. Puncture and counter-puncture about 1 mm. above the extremities of horizontal meridian.

Dressing and bandage the most careful upon the eye operated and the occlusion of the other.

Patients who can be more quiet in an arm-chair than in bed are gotten up after the first day. The first dressing stays on two and even three days. The second, as carefully applied as the first, remains, if all goes well, during two days.



FIG. 61. A CLINICAL LECTURE BY CHARCOT.

In spite of all these precautions, I find among these chosen cases from 3 to 4 per cent of prolapse. I cause the prolapse to disappear without delay, either by excision or by aid of galvano-cautery, covering with the conjunctiva by a suture.

When the visual acuity corresponds with needs of the person operated, I dispense with any secondary operation. In the contrary case, I practice the discission with the knife of Knapp before the patient leaves the clinique. This retards his departure a few days.

Meyers.

Before leaving Paris let us look into the Hôpital de la Salpetrière, where the revered Charcot (Fig. 60)



FIG. 62. MR. TAMBERLIK.]

holds his interesting clinique. To-day he is lecturing on "Hysteria and Influence of Mind over Disease" (Fig. 61). He has three girls on the platform, with

whom he illustrates the subject. He throws them into the hypnotic state, and then, with a suggestion or wave of the hand, causes them to imagine that they are suffering ailments which they do not have; for instance, he produces convergent strabismus by a wave of the hand, causing the internal recti muscles to contract.

At this clinic, one sees the *savants* assembled from all parts of the world—not medical students only, but men of erudition—some of the world's leaders in the different departments of science, all eager to catch the words of this world-renowned and revered teacher of psychical influence in relation to disease.

Our month up, we take leave of Paris, spending the last evening (Christmas) at 103 Boulevard Haussman, at the pleasant home of Prof. Galezowski, where a musical soirée is enjoyed, and where we have the pleasure and honor of listening to Mrs. Galezowska's father, the celebrated singer Tamberlik (Fig. 62). Then we take train for Copenhagen.

BRUSSELS.

Our first stop is at Brussels, where we call upon Dr. Coppez, professor of ophthalmology in the Hospital. Here we witness several operations, among them extraction of cataract without iridectomy, getting a perfectly round pupil. Prof. Coppez is a skillful operator, carrying a steady hand, and although we are with him only a few hours, a pleasant relationship is established. In taking leave of the Professor, it is agreed that we should meet in the near future, and in the meantime each one is to learn another language. The Professor is to learn English; Mrs. Tiffany, Italian; and I, French.

After visiting the grounds of the battle of Waterloo, we take leave of Brussels and continue our journey through the Netherlands to Antwerp, visiting her celebrated cathedral and enjoying the quaint city, and then on to Amsterdam and Rotterdam, with their many canals and bridges.

UTRECHT.

We reach Utrecht, the home of perhaps the most celebrated man connected with ophthalmology, Prof. Donders (Fig. 63). Prof. Donders we find at home and



FIG. 63. PROF. DONDERS.

ready with a hearty welcome, strangers as we were. It was enough for this grand, noble soul to know that we had crossed the seas to meet and shake hands with our great teacher. It was indeed a proud and happy moment for us to sit and have communion with the great master, a bright spot in our lives that will never

be forgotten. He invites us to his laboratory and afterwards to spend the evening with him at his elegant home. At his laboratory he shows and explains the instrument which he has been perfecting for the testing of color-blindness, and shows us some fine drawings of his son-in-law, Prof. Englemon, also some drawings of an assistant, illustrating the contraction of the fibres of the layers of the rods and cones of the retina. These drawings represent the retina in the animal after exposure to light and the relaxation after the animal has been for a time kept in darkness. The experiments are made upon the retina of the frog. The frog is first subjected for some time to a perfectly dark room, then killed, the eye enucleated, and the retina examined. Then another frog is subjected to a bright light for a time, then decapitated, the eye enucleated, and the retina examined. In the two there is a decided difference shown. In the one exposed to the light the fibres of the cones have contracted and the cone is much shorter and thicker than in the one confined in darkness.

Prof. Snellen, whom every doctor knows from his "test type," is out of the city, and so I am disappointed in seeing him. However, our stay in Holland is quite pleasant. We find the Hollanders a hospitable people, and besides very clever. The Dutch, as a rule, speak several different languages, and it is necessary that they should; as Prof. Donders remarked, they are obliged to learn different languages in order to converse with their foreign friends who come to see them, as no one but a Hollander ever thinks of learning Dutch.

HAMBURG.

Leaving Utrecht, we come on to Hamburg, reaching here January 1, 1888. One week ago we were in gay Paris. What a contrast there is between Paris with her glitter and bustle of last Sunday night and the quiet of Hamburg this evening! for although it is

New Year's day, the Sabbath is observed here. In the past seven days we have experienced several changes: we have seen, heard, and talked with four distinct nations, and been obliged to use as many different kinds of money; and in a day or two we shall have added another, Danish.

COPENHAGEN.

Copenhagen is reached on the 2d of January; here the time for one week is divided between Prof. Hansen-Grut's clinique and Thorwaldsen's Museum. Prof. Berry, of Edinburgh, had already written to his father-in-law, Prof. Hansen, of our intended visit, so that he is looking for us and gives us a most hearty welcome to Denmark and his home. Prof. Hansen (Fig. 64) has a fine clinique with all conveniences for work. He is considered the father of ophthalmology of Scandinavia, and is certainly worthy of being so called. His clinique is at No. 5 Hav negarde, Copenhagen. He has a large institution of his own, where the poor can come and receive treatment as well as the rich. If the poor pay anything, it is but two krones per day for board. The doctor, with enthusiasm, tells me that even to-day he has arranged with the Committee of the Government to have a fine clinique connected with the Copenhagen University, in which he is professor of ophthalmology, and if I come back in three years, and make him another visit, he will show me as fine an institution as that of Dr. Graefe, of Halle, or as any in the world.

Prof. Hansen-Grut operates for cataract with iridectomy, and he thinks that the Paris men will all eventually come back to making iridectomy in this operation. He says that "the washing out of the anterior chamber after extraction is entirely superfluous and attended with danger, not only from the introduction of the syringe, but from the intensity of the stream of fluid injected. That certainly in the hands of the inexperienced it is dangerous, and while Prof.

Panas can use the method without diminishing the chances of perfect results, with most it would prove a pernicious practice." Dr. Hansen is doing considerable in the testing of "light sight" as well as "color sight."



FIG. 64. PROF. HANSEN-GRUT.

Dr. Hansen thinks that he was the first to write of the excellent therapeutical results of the electro-cautery in affections of the cornea. He speaks in the greatest praise of its effects and denounces the use of atropia in all affections of the cornea; he only employs it as a means of determining the intensity of the keratitis, for in a very severe keratitis the reflex to the iris

is so great that the pupil does not dilate to its maximum, and soon contracts again after the introduction of the atropia. He believes that in very many cases of keratitis the use of atropia is very detrimental and frequently produces damaging results. I had heard much of Dr. Hansen's treatment of ulceration of the cornea by means of the electro-cautery, and my visit to Copenhagen is principally to meet the man and see his treatment. In ulceration of the cornea Prof. Hansen-Grut applies the blade of the electrode with its flat surface cold to the cornea; then, by pressure of the button, he closes the circuit and brings the electrode to a white heat, searing or cremating the ulcer. The cauterization is done under the influence of cocaine. (This treatment I have used, since I have returned from Europe, quite often and with most satisfactory results. It will dissipate persistent indolent ulcers which obstinately refuse to yield to the ordinary treatment, but this treatment should be used with great caution.)

The evening before taking our departure from Copenhagen is delightfully passed with the Doctor and his family at their pleasant home. Saturday morning we are on our way to Berlin via Rostock; we reach Berlin at 8:40 p. m., where we are to remain one month.

BERLIN.

In Berlin most of the time is given to the study of bacteriology in Prof. Koch's laboratory, where I work early and late. The last few days, however, are given to the visiting of the oculists and their cliniques.

Dr. Hirschberg's Clinique.

At 36 Karl Strasse I find Prof. Hirschberg (Fig. 65). He has a very fine institution and his operating-room is a model room, with north light, floor tiling, walls painted in oil, tables all marble-topped, and a set of instruments for each patient operated upon at any one time. He uses absolute alcohol for disinfecting in-

struments before employing them, and as a douche for the conjunctival sac he uses a 1 to 5000 solution of corrosive sublimate; he also washes the patient's face with a stronger solution before making the operation. Dr. Hirschberg is the author of a very good magnet for the extraction of foreign bodies from the interior of the eyeball. He favors extraction of cataract with-



FIG. 65. PROF. HIRSCHBERG.

out iridectomy, but only makes the simple operation in selected cases.

At Prof. Hirschberg's clinique my attention is called to the fact that the circulation of the blood can be seen in the cornea when affected with pannus. This

is done by two lenses: one for illuminating; the other stronger, for magnifying the vascular keratitis. By this means one sees the circulation similar to that observed in the web of the frog's foot or the tail of a fish —a beautiful sight. If one could not see this in America, it might almost be worth a trip across the ocean.

Prof. Schweigger's Clinique.

Prof. Schweigger (Fig. 66), of the University Clinique, Ziegler Strasse, is one of the finest operators I have met in Europe. After enucleation, he puts in a puckering string at the limbus of the conjunctiva and so closes the wound, thus gaining a more globular-shaped stump for the artificial eye. For convergent strabismus he makes tenotomy of the internal and advancement of the external rectus.

Prof. Schoeler's Clinique.

Prof. Schoeler's clinique is at No. 2 Karl Strasse. This clinique, for Americans who wish to take a course in ophthalmology, is one of the best in the city. Prof. Schoeler (Fig. 67) has a large clinique, and in it one has an opportunity of seeing and studying many interesting cases.

At Prof. Schoeler's clinique is shown a case of excision of the optic nerve for sympathetic ophthalmia, which had the effect of checking all its symptoms. At first the cornea lost sensitiveness and sloughed a little. but subsequently regained vitality, and it is now nearly clear. The operation was made three months previous. (I have seen several cases of excision of the optic nerve for sympathetic ophthalmia, but in every one there has been more or less sloughing of the cornea; and it is yet a question whether the excision of the optic nerve will be any guarantee against sympathetic trouble to the fellow-eye.)

At this time Prof. Schoeler is inclined to favor the extraction of cataract without iridectomy, but, as seen by the following extract from a letter written October 17, 1894, he has abandoned the simple operation:



FIG. 66. PROF. SCHWEIGGER.

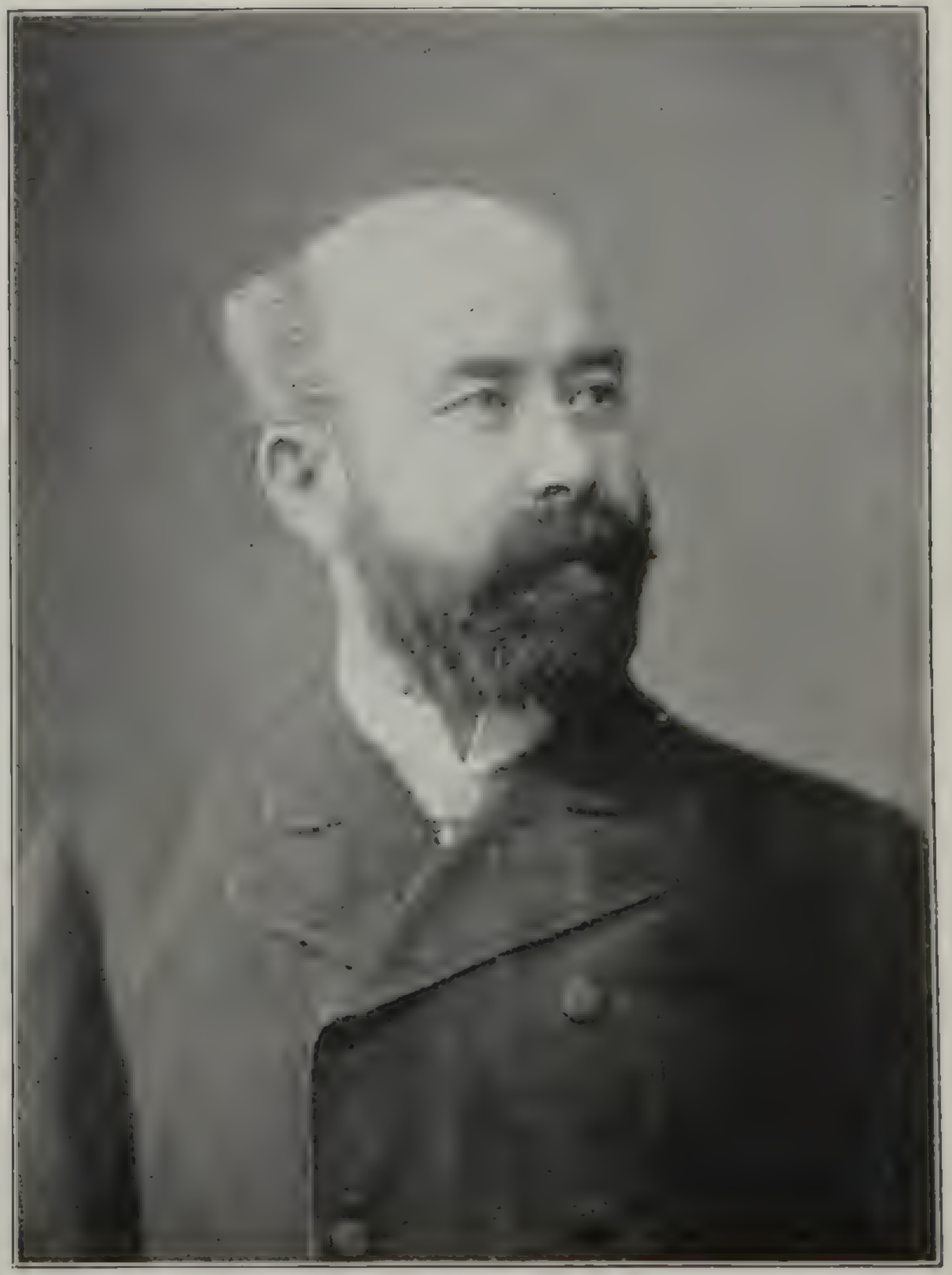


FIG. 67. PROF. SCHOELER.

"Bevorzuge jetzt, nachdem ich lange die Cataract-extraction ohne Iridectomie ausgefuehrt habe, die Extractionsmethode mit kleiner Sphinkterotomie. Die Hornhaut wird stets mittelst geräumigen Bogenschnittes durchschnitten."

Our last evening before leaving Berlin is delightfully spent at a musical soirée given by Professor and Mrs. Hirschberg at their home, 36 Karl Strasse.

HALLE.

On the 8th of February we take train for Halle. Here we are very courteously received by Prof. Alfred

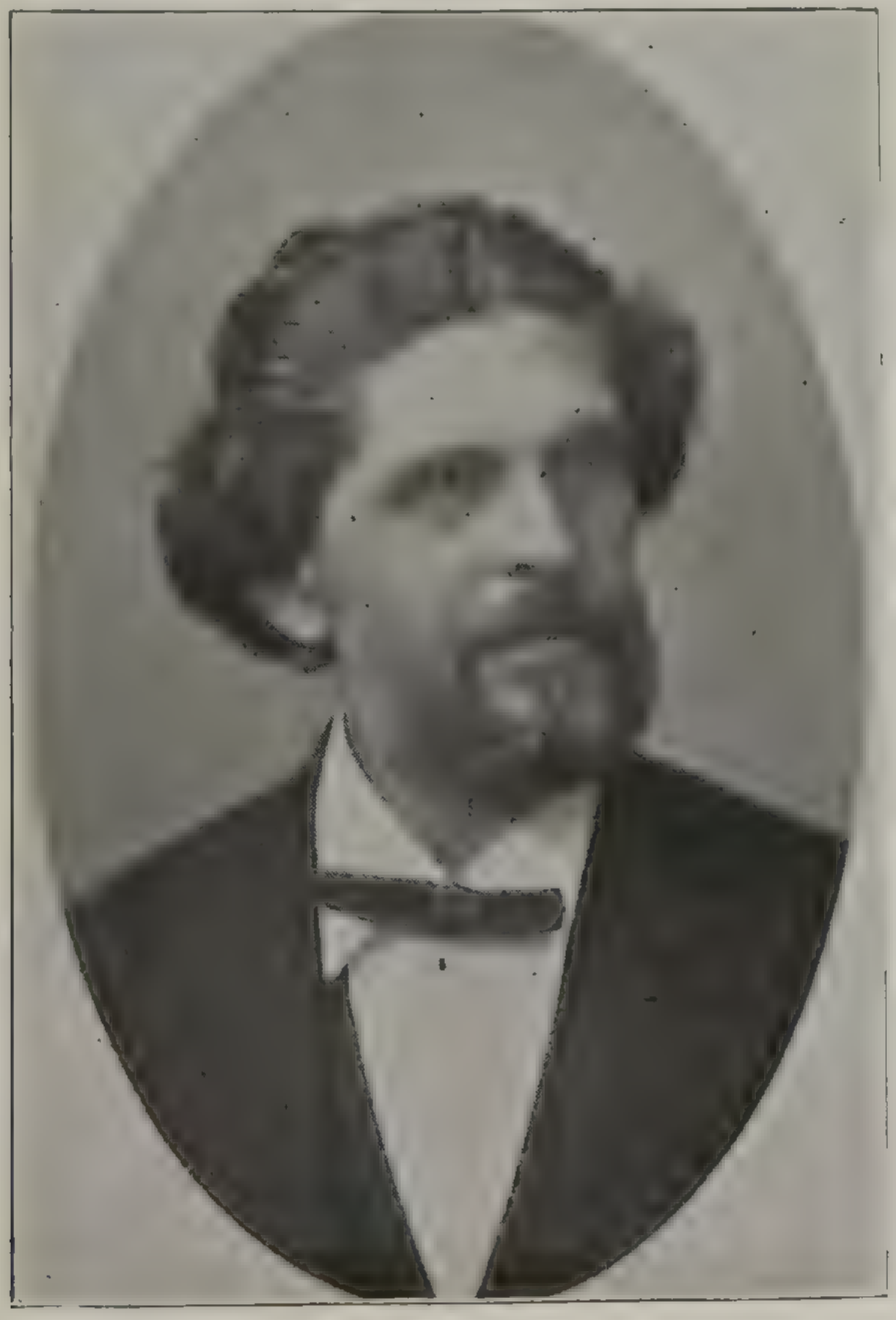


FIG. 68. PROF. ALFRED C. GRAEFE.

C. Graefe (Fig. 68), the originator of antiseptic ophthalmology, and cousin of the celebrated Von Graefe (Fig.

69). Mr. Alfred Graefe is professor of ophthalmology in the University of Halle. He has one of the finest ophthalmic cliniques in the world. Three days are most profitably and pleasantly spent at this ophthalmological center. We see here many cases, and even some new ones: two cases of diphtheritic conjunctivitis—a disease quite rare in America; one tuberculosis of con-



FIG. 69. PROF. VON GRAEFE.

junctiva, inoculated by the sputum of her husband dying of consumption. This patient was a woman of about thirty-five, rosy, and, apart from the conjunctival affection, seemed to be in perfect health. That

it was tubercular conjunctivitis could not be doubted, the tubercular bacillus being present.

A peculiar kind of nystagmus (involuntary oscillation of the eyes), "Collier's," is seen here, caused from looking upward while mining. This is a combination of vertical and rotary, the superior and inferior recti, besides the oblique, being at fault.

Prof. Graefe is a painstaking and careful observer, making drawings of almost every case that comes to his clinique. He says that even a rude drawing illustrative of the peculiar disease is much better than none. He makes a sketch of not only the eye, but frequently of the visage of the patient. He and his assistants are at the present time using oyster shells for drawing the fundus of the eye. They also have the prepared red paper for making their drawings. We see at this clinique a very unusual case, where a piece of steel has entered the eye, traversing the lens without producing cataract and lodging on the retina near the macula lutea. This is quite interesting from the fact that the piece can be seen sticking in the retina, and encysted there without giving rise to any inflammation, nor has it produced more than a slight opacity of the cornea and the lens, although three weeks have elapsed since the injury.

Prof. Graefe makes extraction of cataract with iridectomy "999 times out of a 1,000." He makes both his cut and iridectomy below; his assistant usually cuts the iris. In making this operation he does not employ a speculum or fixation forceps; he has the lids held apart by retractors and steadies the eye with a short, three-tined fork. He uses corrosive sublimate, 1 to 5000, constantly poured over the eye during the entire operation. He tells me that out of 479 cases of extraction of cataract last year he has had but one case of suppuration.

Prof. Graefe is the inventor of a good ophthalmoscope. At his clinique we see a case of suppurative choroiditis of both eyes, with total blindness, in a young woman of 29 years, from puerperal fever, sev-

enth child. Prof. Graefe and his assistant are giving considerable attention to bacteriology of the eye as well as to histological research. A student of ophthalmology wishing to make sections and study the normal histological structure as well as the pathological could find no better place than Halle.

LEIPZIG.

From Halle we take train for Leipzig, where we meet again our friend Dr. Otto Schwartz (Fig. 70),whom we first saw in London at Moorfield's and then again



FIG. 70. DR. OTTO SCHWARTZ.

in Paris. Dr. Schwartz is now located as oculist in Leipzig, and is making some very interesting experiments on the eyes of rabbits at the University here.

He has at the present time seven rabbits upon which he has made excision of the optic nerve for the purpose of studying the nerve-fibres of the retina. He wishes to demonstrate whether or not there are more than one fibre to each nerve-cell of the ganglion. Dr. Schwartz excises the optic nerve, then treats the eye antiseptically, 1 part to 5000 sublimate, twice a day. Some of



FIG. 71. PROF. COCCIUS.

the eyes are enucleated on the second, some on the third, and others on the fourth day, and then sections are made and fatty degenerations of fibres looked for. If there be some degeneration of fibres, he concludes that such fibres do not go to the cells. It is already known that there are more fibres than cells, but whether one cell has more than one fibre is a question. Dr. Schwartz is a conscientious, close observer, and we may expect something of some value from his investigations.

With Dr. Schwartz we go to visit Prof. Coccius (Fig. 71) at the eye clinique of the University of Leipzig. Prof. Coccius does not seem to fully appreciate the good from asepsis, much less antisepsis, paying little or no attention to these principles. For cataract he makes his cut downward, and nearly always makes iridectomy, which he also makes from below. I am a little surprised that these gentlemen should adhere to the old operation of making incision and iridectomy at the lower part, leaving, as it does, full exposure of the coloboma, and hence disfigurement of the eye.



FIG. 72. MARY OF EGYPT.

DRESDEN.

From Leipzig we go on to Dresden. Here ophthalmology is at a discount and art reigns supreme; three days are delightfully spent in looking at the works of the old masters in this, one of the finest galleries of the world. Space will not admit of any description of the gallery and its many beautiful works of art. I can scarcely refrain, however, from mentioning one picture which flashes upon us as we enter the gallery—that beautiful work by Ribera, "Mary of Egypt," with her luxury and wealth of hair, which forms a tunic extending below the waist (Fig. 72).



FIG. 73. HUSS CHURCH, PRAGUE.

PRAGUE.

The quaint city of Prague, the home of the celebrated martyrs Jerome and Huss, with its many *Durchhaeusern*, is our next stopping place (Fig. 73). Here we find another shining light in ophthalmology, Prof. Sattler, of the Prague University. I find him at his private clinique, 49 Kurngasse. He gives me a hearty welcome, and says that he will have plenty to show me on



FIG. 74. PROF. SATTLER.

the morrow, and that I should stay at least some weeks with him; but our time is limited, and will only admit of a few days.

Prof. Sattler (Fig. 74) is doing considerable in bacteriology of the eye. He treats about 5,000 patients a year, and makes about 190 cataract extractions annually. He usually extracts with iridectomy, and only

makes the simple operation in selected cases. He tells me that he occasionally washes out the anterior chamber with a borated solution after extraction. He says that many of his patients come from the country, and only come for the more important troubles of the eye, which accounts for the large percentage of operations a year. The two mornings that I am with him he makes ten operations—seven for cataract. He removes the anterior capsule with the capsule forceps of his pattern. It is scarcely ever that he misses getting the capsule at first trial. He and the professor of physiology were getting out a new test for color-blindness, which they were to bring before the Heidelberg Congress.

The massage for the ripening of cataract is considerably used in Prof. Sattler's clinique. This massage is performed by making puncture through the cornea, allowing the aqueous humor to escape, and then, by gentle pressure, kneading or stroking the eye through the medium of the lid. This, for a tardy development of cataract, which otherwise frequently requires several years, will cause a completion within a few weeks or months.

Operation for Hard Cataract.

No operation of surgery within the last thirty years has been so carefully studied and the details elaborated upon as the extraction of cataract. Previous to thirty years since the operation was the flap, either upward or downward, made without iridectomy. The incision was made fully within the cornea, a few mm. from its limbus.

Daviel first made the operation by a lance-shaped knife within the cornea, at its lower part and near the limbus, enlarging the incision on either side by curved scissors. He extracted the lens through the pupil. Beer modified this operation by employing a triangular knife (Fig. 75), thus doing away with the scissors. The operation thus made was not infrequently a failure from the complications following, induced by bruising and dragging of the lens upon the iris. Later the

operation was modified by Mooren and Jacobson by slight iridectomy. To Von Graefe (Fig. 69), however, is due the credit of making the operation which was for many years and is still to-day made by the majority of oculists throughout the world.

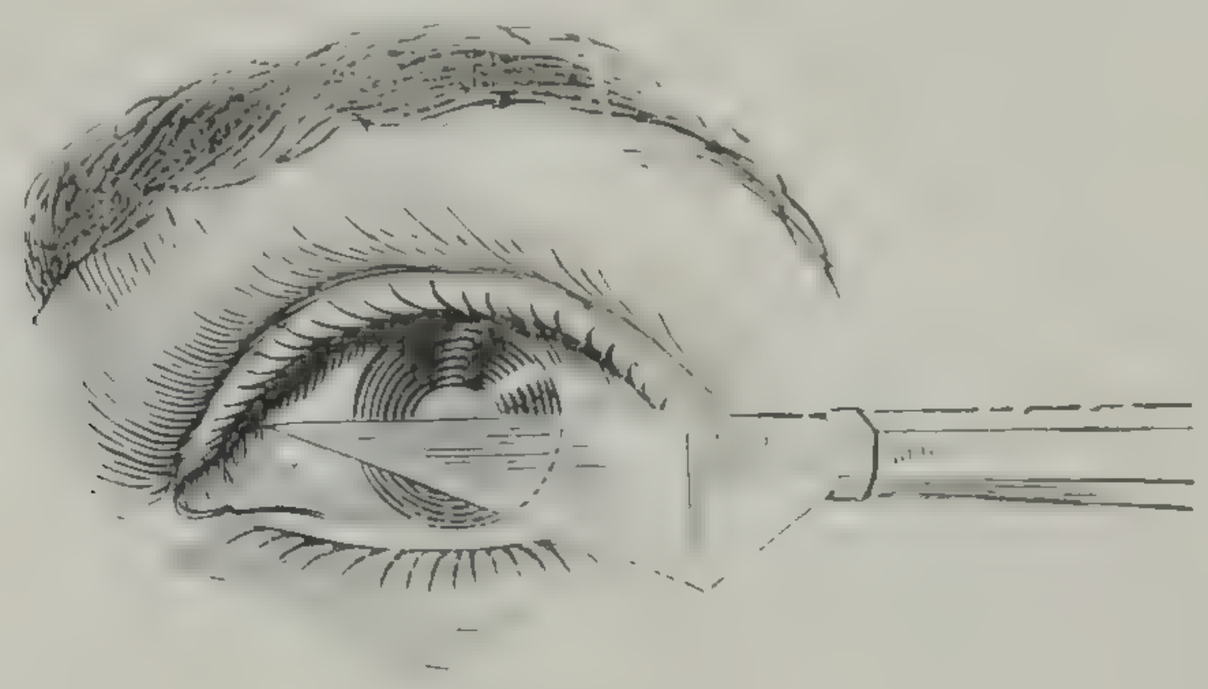


Fig. 75.

The operations of to-day are known as the simple, or that without iridectomy, and that combined with iridectomy. We have almost as many different forms of extraction as we have names of prominent oculists. Daviel and the French school since his time have favored the simple operation, respecting, as they say, the iris in the extraction of cataract. Von Graefe and the German schools, as well as the English and others, favor the operation combined with iridectomy. Daviel's was called the flap operation, and his incision was made within the cornea, at some distance from the limbus. Von Graefe made his incision within the sclera, near the limbus, combining an iridectomy. His incision was almost a straight line, believing, as he did, that this form of incision would unite more promptly than a curved. Instead of Beer's triangular knife, he used a delicate, narrow, biconcave knife—the knife that is universally used to-day (Fig. 19). These two operations have been modified by the surgeons at Moorfields and the tendency has been to approach the limbus. Critchett (Fig. 43) and Juler (Fig. 51) made the operation near the limbus. Stretfield's operation consisted of a puncture made with a lance-shaped knife at the limbus, and then he enlarged by a blunt-pointed, narrow knife, with a sawing movement, thus

avoiding any counter-puncture. Taylor made the operation by means of a keratome (Fig. 76), lacerating the capsule before withdrawing the instrument. With all these operations an iridectomy was com-

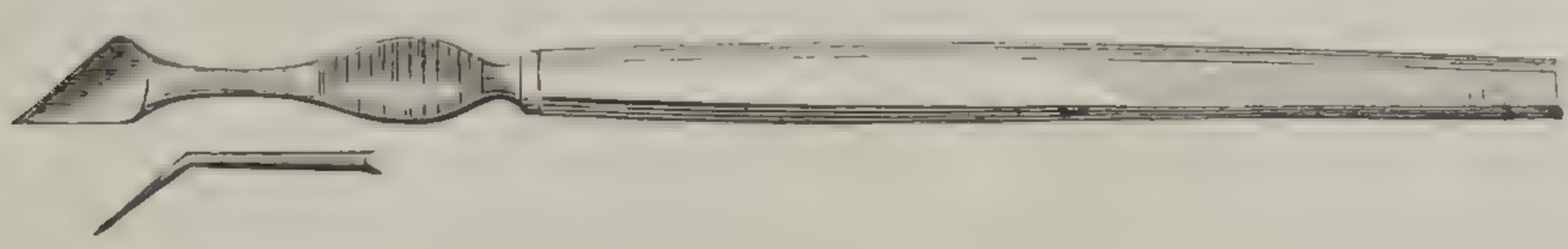


Fig. 76.

bined. Liebreich made his incision at the lower part, near the limbus, and without iridectomy. Something might be said in favor of any one of the modifications; but it is generally agreed by the *savants* on this subject that the incision at the limbus made by Von Graefe's linear knife, other things being equal, secures better results than if it is made anterior or posterior to this part of the eye. At one time it was supposed that a conjunctival flap was advantageous, as it was thought to secure better coaptation of the flap—an indemnity against astigmatism. To-day, however, by most surgeons it has been abandoned.

Daviel was in the habit of making his incision large and wholly within the cornea, at some distance from the limbus; this has also been abandoned. Von Graefe's incision within the sclera back of the limbus is no longer made. If the incision is made within the cornea, remote from the limbus, there is danger of a tardy union with an incomplete coaptation of the wound and cicatrix and asymmetry of the cornea. Frequently, from sepsis and non-union, ulceration and its dire sequences follow; besides, prolapse of the iris may ensue. If the incision is made within the sclera, there is great danger of rupture of the hyaloid membrane—the suspensory ligament—and escape of the vitreous, especially where iridectomy is made; and if an incision at this point be made without iridectomy, there would be great difficulty in the delivery of the lens without bruising or injuring the iris. The operation that has been made for many years at Moorfields in London was called the Von Graefe's modified linear extraction. This consisted in making the incision

nearer the limbus than that of Von Graefe, and with iridectomy, either with or without conjunctival flap, usually with. The incision is made by a puncture at the limbus, also a counter-puncture at a corresponding point opposite; thus transfixing about one-third of the perimeter of the cornea. The incision is completed at the zenith, within the sclera. By turning the knife down after traversing the sclera a conjunctival flap is secured, and then iridectomy is made; but with this incision it was not infrequent that the vitreous escaped, and, if not an immediate, a subsequent loss of the eye resulted. This operation or that introduced by Graefe is probably the easiest for the delivery of the lens, but is hazardous to the vitreous; besides, we believe, with the conjunctival flap there is more danger of sepsis than without.

Ideal Operation.

The operation of to-day by the majority of operators is narrowed down to two forms, with or without iridectomy, and the incision is at the limbus or slightly within the cornea. Some operators, almost without an exceptional case, make the simple extraction; others, on the other hand, with scarcely an exception, make the extraction with iridectomy—both equally skillful, erudite, deft, and of extensive experience, observation, and practice. Some of our best authorities even recommend a preliminary iridectomy and always practice it. I have seen Dr. Panas, of Paris, who perhaps operates as often as any man in the world, being, as he is, at the head of a large Government institution, make extraction several times daily, and yet I never saw him make other than the simple operation. Again, in the same city, at another clinique, equally as large, with Prof. Galezowski at its head, the operation was often combined with an iridectomy. Landolt, in his extensive collaboration, gives the names of many of the most prominent operators throughout the world and their different methods of operating. Some favor the simple, some favor the iridectomy.

Some of the highest authorities will insist upon irrigation of the anterior chamber, thus expelling any remaining cortical particle of the lens after the extraction; while others with equal vehemence will insist that no fluid or instrument should be introduced into the anterior chamber after extraction. I have witnessed Panas operate many times, and I know that it is his custom always to wash the anterior chamber after extraction, thus sweeping way any particles of the lens substance, clot, or débris remaining, before closing the lids. In others I have noticed that they are very particular not to enter the eye with an instrument or fluid, or even to press the cornea after extraction, preferring to remove any remaining substance by digital massage through the lids, or, perhaps, by taking hold of the lashes of the lower lid, using its margin with slight pressure to clear the pupil. These special techniques should be left with the individual, for what would contribute success to one operator might be hazardous to another. The flushing of the anterior chamber with the proper syringe scrupulously antisepticized and with the fluid non-irritant and yet antiseptic, in the hands of Panas with his careful manipulation, might, in the hands of others less scientific, deft, careful, and painstaking, with perhaps a tremulous or untutored hand, prove most disastrous. The danger of sepsis from the instrument, fluid used, and from bruising by the rough handling of the instrument within the wound, in the hands of the majority of operators, is so great that irrigation is not to be advised, except in those who are peculiarly deft and scrupulously aseptic. Occasionally there is hemorrhage into the anterior chamber after the incision, especially if iridectomy has been made, and then irrigation may be imperative. The hemorrhage should be gotten rid of, if possible, by irrigation and massage before the extraction of the lens.

The simple operation, all things being equal, is the ideal operation; it is the prettiest and most to be desired, as by it a circular pupil is retained, which is an advantage as to the acuity of vision and does not disfigure the eye; however, this operation as practiced

by the majority of operators has not yet brought about as large a per cent of good results as the operation with iridectomy. There is much more danger of unfavorable sequelæ to this operation, for in the exit of the lens it has to pass over a portion of the iris, which portion is liable to be contused or bruised, or perhaps folded into the wound. It is only in selected cases that this operation is warrantable in the hands of the majority of operators; there is more danger of subsequent prolapse of the iris, and also cyclitis, which might produce sympathetic ophthalmia. In cases where the pupil is active and dilates widely, and the lens is not too large, other things being favorable, the simple extraction may be selected; otherwise, if the lens is large, and especially if the pupil is rather sluggish and cannot be fully dilated, it is hazardous to attempt the extraction without iridectomy.

VIENNA.

Leaving Prague, we come on to Vienna, where a week is spent in the cliniques of Profs. Fuchs and Stelwag. Prof. Fuchs (Fig. 77) was assistant here when I was in Vienna ten years ago. He now takes Prof. Arlt's place. He and Prof. Stelwag (Fig. 78) both make iridectomy in the extraction of cataract. Prof. Fuchs stands at the head of ophthalmology in Austria and has one of the largest cliniques in the world. It is one of the principal departments of the "Allgemein Krankenhaus," one of the largest hospitals, if not the largest, in the world. Here congregate students from all parts of the globe; and special attention is given to what is known as "post-graduate instruction" in all the different departments of medicine.

Largest Ear Clinique in the World.

Prof. Politzer (Fig. 79) tells me that he is now injecting pilocarpine in the middle ear for some forms of tympanitis, sclerosis, etc., with good results. Prof. Politzer stands preëminently at the head of otology.

He is recognized as the peer of all authors on this subject. His book contains 800 pages on this little organ of hearing. Vienna, with Prof. Politzer, is undoubtedly the best place in the world to study affections of the ear.

Here at Vienna special attention is given to the diseases of the throat. At Prof. Gruber's (Fig. 80) clin-



FIG. 77. PROF. FUCHS.

ique we find 26 patients seated and as many diseases written on the blackboard. It is an interesting picture—this of the many patients with different affections of the throat, with from thirty to forty students gath-



FIG. 78. PROF. STELWAG.



FIG. 79. PROF. POLITZER.



FIG. 80. PROF. GRUBER.

ered from different parts of the world, with their headlights peering into the musical boxes, discussing one with another the mysteries there seen.

At Dr. Königstein's special eye course one has an opportunity of viewing, by means of the ophthalmoscope, the back part of the eye of many different animals. Here an opportunity is given for the study of the optic nerve, retina, etc., of the frog, the rabbit, the dog, the cat, the monkey, the snake even, as well as that of man.

After a week's stay, we take leave of Vienna, and in saying good-bye to our pleasant landlady at No. 8 Universitäts Strasse, the numerous familiar greetings (roguishly indulged in on the part of the American students gathered there) come to mind; such as, "Ich danke bestens," "Empfehlen Sie mich," "Ich habe die Ehre," "Küss die Hand," "Meine Komplimente," "Servus," "Adieu," etc., etc.

From Vienna we go on to Venice. Our way lies across the Alps. It is a most picturesque route and a most glorious view opens out to us as we climb zig-zag, crossing and recrossing many times our path, to the top of the Alps. We stop over night at the wonderful cave of stalagmites and stalactites, Adelsberg Grotte (Fig. 81), and when we see these wonderful formations of delicate tracery and gigantic magnitude, resembling curtains of the finest texture, and animals and monuments of many tons weight, and realize that they are formed by the continuous dripping of water through the crevices in the rocks and that it requires more than twelve hundred years to form a deposit as thick as a knife-blade, we not only stand in awe of the great architect Nature, but wonder how many ages back in the dim past these structures first began.

From Adelsberg Grotte we come on to Trieste, where we take boat for Venice. The following morning, as we set sail from Trieste, the sun casts its golden rays over the deep blue Adriatic, which is spread out before us; there is scarcely a ripple on its surface, here and there are small fishing-smacks, and one large steamer just coming in from Ancona. There are a few

sea-gulls sporting in the air, and now and then diving into the briny deep for their morning meal. At our back is the picturesque little town of Trieste, one of Austria's principal harbors, guarded by the Adriatic on two sides and on the other two by her castle-crowned heights. As we set sail for Venice, we pass at our

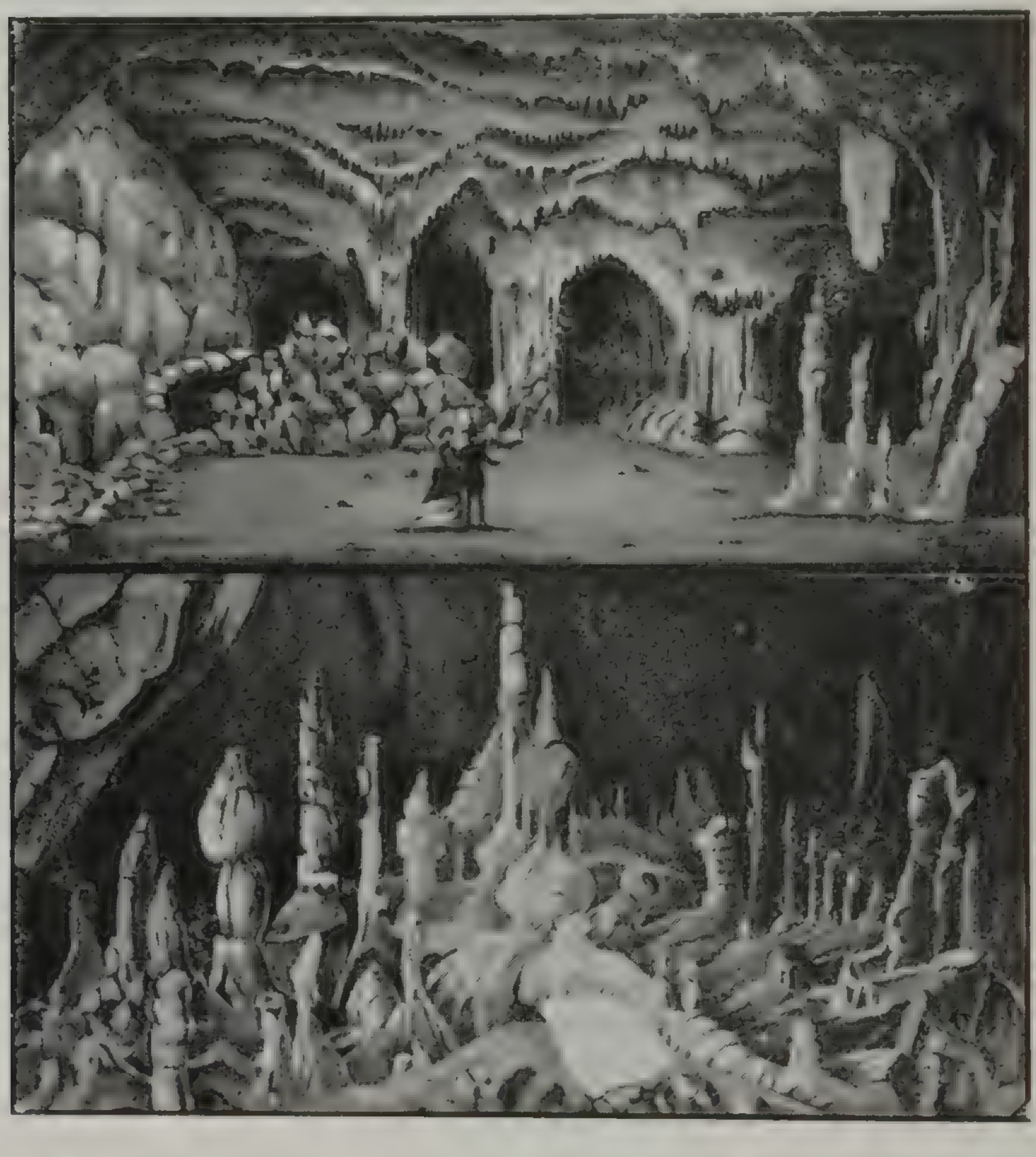


FIG. 81 ADELSBERG GROTTE.

right the celebrated beautiful villa of Maximilian. In a few hours we are in mid-ocean. Above us is the clear blue Italian sky, fanned by the gentle zephyrs. We are happy, and quite prepared to visit the one fairy city, floating, as it seems, in the Adriatic Sea.

VENICE.

It is just as the Italian sun is sinking behind the snow-capped Alps in the western horizon when we

come in sight of Venice. The bells were sounding from the Campanile of old St. Mark's (Fig. 82) and reëchoing from the many other cathedrals in various parts of the city. As we come nearer, the church spires, towers, castles, and palaces loom up more distinctly to view. Coming up opposite the Doge's Pal-



FIG. 82. ST. MARK'S.

ace, our ear is gladdened by the most enchanting music from a brass band playing upon the Piazza at St. Mark's; here we cast anchor, and in a few moments our ship is surrounded by gondoliers gliding along in their swan-like gondolas, ready to take us to our respective hotels. To the hotel our gondola glides into the canal between the Doge's Palace and the old prison, and we pass under the Bridge of Sighs. We find, after landing, that although many of the houses of the city were built from out the sea, having an approach by water through the medium of the canal, yet most open to narrow streets, which also traverse the town. The streets are not only narrow, but tortuous and dark, passing over arched bridges, through houses, in and out of courts and in the most quaint-looking places.

One walking through Venice is constantly surprised by some new loveliness, such as little squares with beautiful plots of green grass, flowers, and fountains which jet water to the height of many feet, to fall back in form of spray, commingling with the floral air, and kissing the cheek of the passer-by as he wends his way, perhaps into some elegant church near by. Besides cathedrals, palaces, villas, castles, and prisons, all having their peculiar interest, the stranger sees many a curious phase of human life in the streets. The week we were there happened to be high carnival week. On the streets, booths, shows, menageries, panoramas, and gambling-places were doing a thriving business. The deafening din of the several criers, grinding of hand-organs, the chattering of monkeys, attracted crowds of Venetians, filling the streets and making it impossible to pass except by a desperate effort and a great amount of willingness to squeeze and get squeezed.

Our second day at Venice was spent mostly in the gondola, gliding up and down the principal canals, making sharp corners, under a goodly number of the three hundred and seventy bridges which stretch over the numerous canals, and taking a general survey of the fairy city. The evening was passed in the Piazza of St. Mark, one of the gayest places in the world. Here are to be seen, any evening after four o'clock, most striking pictures. The Piazza of St. Mark is the largest open place in the city. It is surrounded on three sides by marble palaces, towers, hotels, and stores of many kinds. From the second floor the buildings project several feet beyond the first story, and are supported by a row of colonnades, some twelve or fifteen hundred in number. The corridors back of these form a beautiful promenade, and at eventide are ever crowded with gay pleasure-seekers.

We pass through the Bridge of Sighs and examine some of those cold, damp, and gloomy cells of the prison. As we enter this dark passage (for the bridge is a closed one, having but two small grated windows) a feeling of sadness comes over us as we think of the

hundred poor souls who have passed this way, looking for the last time, as they pass the barred windows, out on the beautiful world, thence into utter darkness, eventually into oblivion. We realize to the full extent why the bridge is called the Bridge of Sighs.

Passing from the bridge, we grope our way through the dark corridors, visiting most of the cells which were formerly the scenes of so much suffering and torture, for this is where many a poor fellow dragged out a weary and painful existence. Here were the thumb-screws and other instruments of torture. As we go from one cell to another, our guide calls our attention to the fact that they are under water, cold and damp, without a ray of sunlight. Some of the cells were lined with wood; these were for banditti and such offenders, while those with the cold, damp stone walls and floors were for political offenders. Near the cell of Foscari is the block "which to this day bears the stain of blood as it dripped from the gory blade of the Masked Three."

From the prison we enter our gondola and glide down the Grand Canal, where numerous gondolas and other craft are seen plying up and down at all hours of day and night. About half way up the canal we pass under the Ponte de Rialto, which was built in the middle of the sixteenth century, and until forty years ago it was the only connecting link between the east and west parts of the city.

As we proceed from the bridge we pass the villa of Foscari, Lord Byron's home, and others. We will now take a farewell look at Venice and its surroundings from the Campanile of St. Mark's, an isolated square tower 355 feet high. The ascent of the Campanile is easily made; we go up by a winding inclined plane of thirty-eight bends, and finally by a few steps we reach the top, where we behold a most enchanting scene. In the west, rising beyond the Lagune, we see the Alps in all their glory, mantled with rich purple robes and crowned by glittering caps of snow. Beyond, a little to the left, are to be seen the Istrian mountains, a most charming picture at twilight. At our right is the blue Adriatic, dotted here and there by other towns

built in the Lagune; they give the appearance of so many fairies floating on its surface. Beyond these, farther out in the ocean, may be seen several sailing vessels and steamships, which add to the beauty of our picture. As we stand here, looking out from the top of the Campanile, viewing Venice, though in her fallen condition, we can not but agree with the poet who said:

"Thou art the grace of the world, the home
Of what Art yields and Nature can decree.
E'en in thy decay, what is like to thee?
Thy very ruins are beautiful, thy waste
More rich than other clime's fertility,
Thy wreck a glory, and thy ruin graced
With an immaculate charm which cannot be
defaced."

PADUA.

March 1st finds us at Padua, the home of Dante for a short time. Padua is a quaint old city, with many porticos and arcades. We visit Dante's old home at 3350 Ponte St. Lorenzo.

BOLOGNA.

Bologna is the next town. We reach here the following midnight. It is the home of Galvani. At the old University we find some of the first batteries of this scientist. On the wall of the University hangs a portrait of Galvani. We walk up the leaning tower, 482 steps, from the top of which we get a most magnificent view of the city and the Campagna (Fig. 83). There are mountains on the south, dotted with villas; the Campagna on all other sides extending out as a vast level plain for miles, covered with houses. Galvani's statue of wood is in the amphitheatre of the ancient University. It is here that he made his first experiment in galvanism with the frog. A statue in wood of the discoverer of the blood-corpuscles is also here, with many others of the celebrated men of Bologna.



FIG. 83. LEANING TOWERS OF BOLOGNA.

ANCONA.

On March 3d we go on from Bologna to Ancona. We pass through a beautiful tract of country, level for many miles, and covered with large vineyards and orchards of mulberry-trees. About 5 p. m. we reach the Adriatic Sea and follow along the coast.

"'Twas nae sunny Italy with warm and balmy skies as we entered the old town—frost was in the air and snow at our feet. We put up at the Hotel Vittoria—windows wide open, no fires. We were shown to our rooms. I

looked hastily around, querying the possibilities for fire; no hope save mayhap in the smiling face of the Greek porter. So, with utmost confidence, I asked, 'Can we not have some fire?' 'O yes, lady!' and in a moment he was back, bringing an artistic-looking wire-frame stand about four feet high, with two shallow bowls, one on top and the other half way down, each filled with fluffy-looking bits of something grayish white. My look of dumb astonishment changed to



FIG. 84. PANORAMA OF ANCONA.

implicit faith as I turned from the 'scaldino' to the triumphant face of the man. He put the thing down in the middle of the room, stooped gracefully, caressingly over it, breathed upon it, and it became a living fire. We gathered around it, held our congealed fingers daintily over it (one must be artistic in Italy), and imagined we were warmed. Reaction or realization came after a little, however, and I rang the bell and demanded of our Greek more fire. Oh, the look on his

face! It said: 'Americans require much, Americans are made of money!' A second 'scaldino' like the first appeared, and therewith we were obliged to be content.

"After getting thoroughly warmed, we went out to see the city of such great age and so many vicissitudes. From its hills we could see the blue Adriatic and some of the beautiful buildings that lay between us and it. The city is built on the slopes of two hills, spurs from the Apennines, in the form of an amphitheatre, and has many fine buildings.

"Its Cathedral Cariaco is said to occupy the site of an ancient and famous temple of Venus. Its cupola is reputed to be the most ancient in Italy, and surely it looks venerable. Its pillars are of Parian marble. And what has this venerable church seen? The city devastated by Goth and Vandal, by Roman, and by the Saracens in the tenth century. I sat here on the old portico and pondered over fair Italy, storm-tossed Italy, Italy the conservor, promoter of the flowering period of Art, in sculpture and in painting. Cold? Not I. Italian-like, I had forgotten all about the cold.

"We sought the old churches of San Dominico and San Francesco, with their rich treasures from Titian's brush.

"We had thought of taking boat from Ancona to the Holy Land, but were doomed to disappointment in our cherished plan, for no ship nor steamer of the many hundreds that yearly visit this port came to take us to the promised land, with the pledge of bringing us back when we must be back. The fort, once seen, is long to be remembered. You can see any day there, Greek, Jew, Levantine, Turk—indeed, people of almost every nationality under the sun."—*O. E. F. T.*

Ancona is a beautiful little town, situated on a small peninsula on the Adriatic, with water nearly all around. It stands on an elevation, commanding a beautiful view of sea and mountains, with a level plain spreading out in front. On our way to Tarento we pass through a charming country, with mulberry-trees. The mulberries are cultivated largely here for the food of the silkworm. Tarento is a beautiful city, and has

more of a modern appearance than any city we have seen in this country. Several new fine stone buildings are being erected in different parts of the city. We see here some of the most curious fish. The city is very badly kept, however, having no sewerage.

CATANIA.

March 7th, 10 a. m., finds us sitting on the little steamboat, eating mandarins, just before leaving Reggio, Italy, for Messina, Sicily. The following day we reach the beautiful town of Catania (Fig. 85).



FIG. 85. CATANIA.

Here we find the remains of a beautiful Greek theatre underground. Catania still contains considerable wealth, as is evidenced by the stores, dress of the people, and fine equipages.

From Catania we skirt the coast of the island, passing through a beautiful, rich country, covered with

orange and lemon groves. All along the way are to be seen the oleander and the myrtle darting up from the crevices of the rocks.

SYRACUSE.

March 9th, about midnight, with Mount Ætna constantly in view, we reach the ancient historic city Syracuse, the stamping-place of all nations, once the most important city of the Greeks, the cradle of Italian song, the depository of art and sculpture. In 405 B. C., Syra-



FIG. 86 SYRACUSE THEATRE.

cuse, under Dionysius the Tyrant, was the most important city of all Europe. This was the wrestling-ground for Romans and Carthaginians. As we go to the hotel we pass over a very rocky ground, which was formerly the quarter of Acradina. Here we see tombs and other traces of the ancient city. Hyacinths and myrtle

overhang the tombs. This once was the busy part of the city, but now all is quiet and there is scarcely a sound excepting the ringing hoofs of our mules. Traversing the streets of the tombs, we notice some remains of the wall of seven miles which Dionysius the Tyrant caused to be built in twenty days by the combined labor of 6,000 masons, 200 peasants, 6,000 oxen, and several hundred stone-cutters. We come finally to



FIG. 87. DIONYSIUS' EAR.

the remains of the old amphitheatre and to the theatre of Syracuse (Fig. 86). Not far from these places of amusement of the ancient Syracusan is the celebrated Ear of Dionysius (Fig. 87). This is a cave in the rock of more than sixty feet in height, and as many in depth.

It is said that the acoustics of the cave are such that the slightest whisper from the further end of it can be heard at its mouth, and that Dionysius often came to the opening to listen to what the prisoners were saying. As a souvenir, I bring a piece of marble of which the seats in the amphitheatre are composed, which piece I yet treasure and use as a paper-weight. It bears the inscription "Syracuse," with the date of our visit, March 2, 1888. From the Ear of Dionysius we go to the catacombs, which are an extensive subterranean city, with numerous avenues branching out in various directions, containing innumerable sepulchral niches and chambers. Many sarcophagi bear the inscription of noted potentates and warriors of those ancient days of more than 400 years B. C. Our stay of a week is most delightful in this ancient city, wandering about among the catacombs of that once flowery Sicily. The museum contains many ancient and interesting specimens. At the villas one is allowed to go and gather oranges from the trees without money and without price.

The Papyrus.

At Syracuse we see for the first time the papyrus growing in the Arethusa Fountain River. It is not indigenous, but is said to have been brought and planted here in the eighth century. The papyrus came originally from Nubia, and was transplanted from there to the Delta of Egypt, where it was extensively cultivated. Pliny speaks of it as being plentiful in the waters of the Niger and of the Euphrates.

It was extensively used by the people of the Orient in early days. We frequently find the bark or strippings of the stems wound about the mummies in the catacombs, and it is said to date back to more than 2000 B. C. It was chiefly used as writing-paper, for manuscript of legal documents, for religious rolls, and for the ritual. Of its head garlands for the shrines of the gods were made. The pith was used as a food, also as fuel; besides, this pith served for calking vessels. It was converted into cloth for sails, and the lit-

tle boat in which the infant Moses was found in the bulrushes is said to have been made of the papyrus, cleverly wrought by Pharaoh's daughter.

The writing-paper used so extensively throughout the Old World in early times was almost exclusively made from the strippings of the papyrus stalks, manufactured into sheets or rolls, and it was quite expensive. Herodotus speaks of its selling at Athens, 407 B. C., for one drachma a sheet.



FIG. 88. PAPYRUS GROWING IN THE FOUNTAIN ARETHUSA.

The papyrus that is now seen at Syracuse is a larger and finer variety than that of Egypt; it grows here to the height of six or more feet, while that of Egypt is only about three feet. The picture (Fig. 88) gives a good idea of its appearance as it is found in the river here in Syracuse, Arethusa Fountain.

From Syracuse we go on to the beautiful city of Palermo, the capital of Sicily, and from Palermo we take ship for Naples.

NAPLES.

We pass a very unpleasant day and night, the Mediterranean being very rough and the boat small. After this rough voyage, we again walk the streets of this beautiful Italian city, Naples, which has grown much since our last visit ten years ago. It is considerably changed now. The drinking-water is brought by the aqueducts from Salerno.

Drifting.

"My soul to-day
Is far away,
Sailing the Vesuvian Bay;
My winged boat,
A bird afloat,
Swings round the purple peaks remote:

"Round purple peaks
It sails, and seeks
Blue inlets and their crystal creeks,
Where high rocks throw,
Through deeps below,
A duplicated golden glow."

PESTO.

After a few days' stay in the beautiful city of Naples, visiting again the ruins of Pompeii and Herculaneum, and climbing to the top of Mount Vesuvius, we go to Pesto, or Pæstum. It is on March 16, 1888, Sunday, a bright, pleasant spring morning, that we take train from Naples for Pesto. The celebrated roses are in bloom, the orange and citron trees are loaded with fruit, the children are playing around the old ruins as they were wont to do thousands of years ago. Lizards dart in and out among the old columns. On our way we pass the ruins of Pompeii, where are still at work the peasants with their baskets (Fig. 90), excavating these ruins of cities laid waste so many hundred years ago by the tumultuous old Mount Vesuvius, who is now



FIG. 89 NAPOLI PANORAMA DEL VOMERO.



FIG. 90. POMPEII.

quietly smoking his pipe in the distance (Fig. 89). We are hurled along across the Campagna, now bedecked with a flora of many varieties and beautiful hues. Soon we come in sight of the open sea and near by are the ruins of the old Greek temples (Fig. 91). It seems almost sacrilegious for us to come steaming and whistling up to this sacred precinct of the gods, left so quiet and alone for these past hundreds of years. It was some five hundred years before Christ came on earth that the Greeks crossed the seas to this quiet, lonely place to



FIG. 91. PESTO, TEMPIO DI NETTUM.

build these beautiful temples in honor of the god Poseidon for his guidance and protection while sailing the briny deep. We find the temples in a wonderfully good state of preservation, considering the many years that they have been exposed to the vicissitudes of time and the elements, for neither vandal nor iconoclast has been there.

This quiet, beautiful spot was seldom visited by man

for many centuries—in fact, up to a few years ago, it was not safe for one to come here for fear of pirates and bandits, who used to prowl about these regions. These temples are of the Doric type of architecture. The great temple of Poseidon (Fig. 91), or that of the god Neptune, is said to be the most perfect remains of the Greek temples outside of Greece in the whole world. Comparatively speaking, the columns are short, and they have no entasis, and these columns have twenty-four flutes, whereas Doric columns do not, as a rule, have more than twenty. This temple still retains its upper row of columns, the only ruins of a temple in the world possessing them. The stairs going to the upper columns or floor are still remaining, though partly destroyed. This temple is sixty-five paces long and twenty wide.

Continuing our journey, we arrive in Rome.

ROME.

We scarcely know the city, as it has grown so much within the last ten years, except in the old parts.

"Standing again in the ancient Forum of Rome (Fig. 92), we are impressed by a thousand memories of the dead past, and in silent wonder gaze upon the magnificent ruins which surround us, emblems of all that was once grand in art and architecture. The long procession of the silent past unfolds before us—the lordly pomp and conquering emperors, the triumphal marches, the mournful procession of martyrs, the sturdy bands of gladiators, the soldiers of the imperial guard, crowned with olive and bearing trophies, all seem to pass in silent view before us. The remains of arches, temples, columns, basilicas, and churches crumbled by the all-devouring hand of Time rise up before us. The very stones upon which we step have been worn away by pious and holy men, and the ground upon which we gaze has been rendered sacred by the footprints of Christ, St. Paul, St. Peter, Cicero, Cæsar, Mark Antony, and many others. The Forum of to-day is not the



FIG. 92. ROMAN FORUM.

Forum of imperial Rome. Alas, how changed! Fire and flood, tempest and war, and the silent hand of Time have broken down many of these valuable monuments of antiquity. We gaze in vain for the council-hall of Tullius Hostilius or the temple of Vesta, with its never-dying fire; the dwelling of Pontifex Maximus has long disappeared, and the populace who resorted to the Comitium lie covered with the dust of centuries."

But we must not tarry longer, but hie ourselves homeward. March 28th finds us at Pisa, in the Baptistery, listening to the world's most wonderful echo.



FIG. 93. STREET OF VERONA.



FIG. 94. VERONA AND HER COLISEUM.

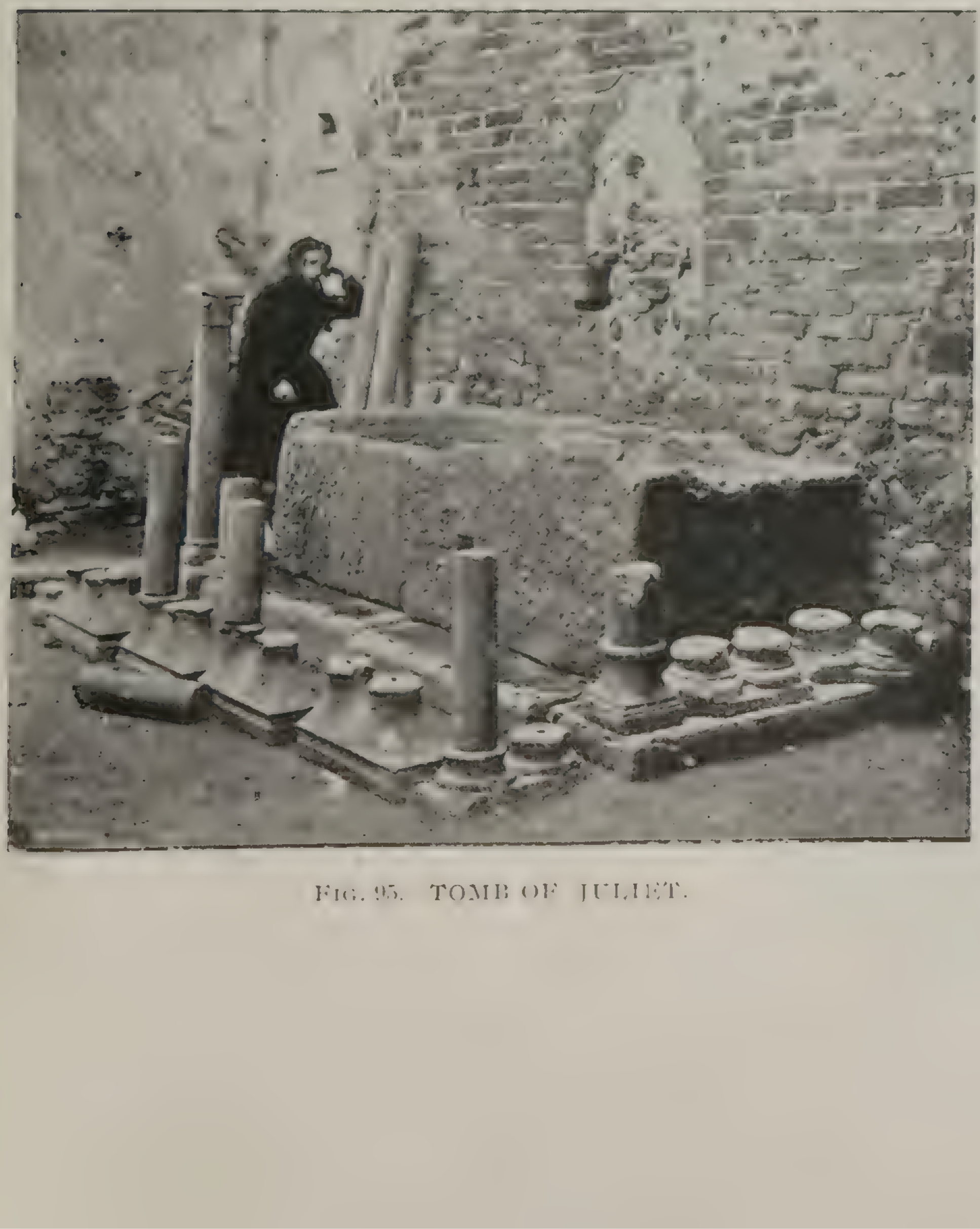


FIG. 95. TOMB OF JULIET.

VERONA.

March 31st we reach Verona (Fig. 93). We put up at the Hotel Colombe d'Oro. Verona is a quaint city at the foot of the Alps. The old amphitheatre is very interesting and in a good state of preservation (Fig. 94). Besides the amphitheatre, the balcony of Juliet and her tomb are visited (Figs. 93 and 95).

As we wend our way down the mountain we are specially interested in the numerous shrines all along the way on either side, where pilgrims come to do penance.

MUNICH.

We reach Munich just at nightfall. A beautiful picture is spread out before us: the city nestling at the foot of the hill, with the rapidly running Elbe tracking its way across the plains and lit up by the beautiful Alpine sunset.

At this classic town our interest is divided between art, song, and science.

HEIDELBERG.

After visiting the principal art galleries of Munich, attending one of those classic concerts and calling upon a few oculists, we then go on to Heidelberg, where we find the far-famed Prof. Becker (Fig. 97) at the head of one of the finest eye cliniques of Europe, similar to that of Halle. Prof. Becker just now is quite enthusiastic in the use of hot water for different inflammations of the eye. He uses a coil, through which the hot water flows around the eye, keeping up the desired temperature. At Heidelberg the Ophthalmic Congress is to meet in August, and a more delightful place for the meeting could not be found in all Europe than this picturesque, classic, old town of Heidelberg, with its winding wooded paths and its old castle (Fig. 96) overhanging the mountains—a beautiful example of the Renaissance architecture, adorned by large and imposing

statues. At its foot runs the Necker swiftly, extending out into a most beautiful valley where it empties into the Rhine.

The University of Heidelberg, in which our friend Dr. Becker is professor of ophthalmology, is the oldest



FIG. 96. HEIDELBERG CASTLE.

in all Germany. It was founded about the middle of the fourteenth century, and to it come students from all countries. It has a corps of professors more than sixty in number. The students, from 500 to 700, are largely from America and England.

STRASSBURG.

Our next stop is at the old cathedral town, Strassburg, where we meet another shining light in ophthalmology, Prof. Stilling (Fig. 98), who has given us the



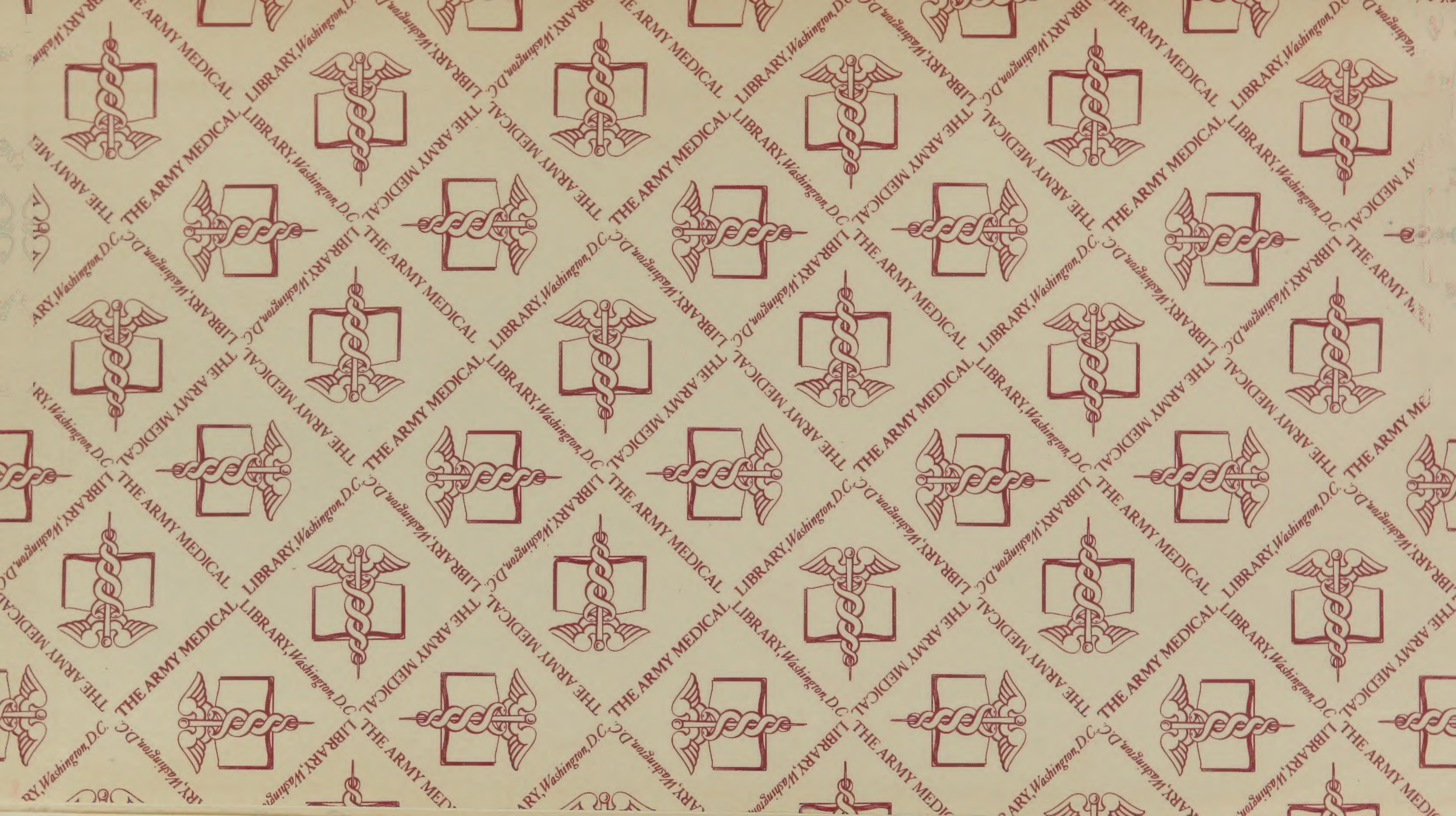
FIG. 98. PROF. STILLING.

FIG. 97. PROF. BECKER.

valuable drug methyl violet (now quite generally used in the different affections of the eye).

From Strassburg we return again to Paris, and after a week's stay, April 21st we take the *Champagne* at Havre for New York. We know the exact day when we shall reach New York, as the French ship makes the trip, regardless of the weather or conditions of the sea, in seven days; and in just ten days from the time we leave the French harbor we find ourselves again in Kansas City.

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